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## PRIZE ESSAY.

The following is the essay on wheat-growing, to which the examining committee, at the late State Fair, awarded the premium, as being the best presented upon the subject:

## ESSAY ON WHEAT-GROWING.

WRITTEN BY THE EDITOR OF THE MICH. FARMER.

There are two codes of laws, to which all the inhabitants of the earth owe allegiance. There is the moral code, revealed in the bible, which prescribes to man his duty, as a moral and accountable being, and metes out to him his award.

And then, there is the physical code, sometimes called "the laws of nature," which extends its jurisdiction to the heavens above, and to the earth beneath,—regulating the motions of the heavenly bodies, giving us day and night, summer and winter, seed time and harvest,—and at the same time taking cognizance of the elements out of which our crops are made, fixing their proportion in the soil, governing their action, and prescribing the *conditions*, upon which alone they can be organized into crops.

And we may just as well undertake to resist the execution of one portion of this code, as another—just as well undertake to set the law which governs the motions of the heavenly bodies at defiance, by planting our gardens in November, as to undertake to set at defiance the law which governs the conversion of the soil into wheat, or corn, or oats, for it would be just as much at our peril in the one case as in the other.

That law is imperative; it is also inexorable. Its first great requirement is, that you honor the drafts which you make upon the soil by each successive crop, by returning to it the elements you have drawn from it, in due time. That is the

law, and you can obey it, and reap the reward, or you can disobey, and be sentenced to hard labor and hard fare—the alternative is before you.

But do not flatter yourselves with the hope of escape, if you fail to comply with its requisitions, because you was ignorant of its claims, or because you was in debt, and vainly thought that was the way to pay your debts. You cannot escape; you *can* escape, you may *dodge* the penalty of human laws—but this great law of the universe, framed when the foundations of the earth were laid, and over whose enactment the morning stars sang together, no man, from the foundation of the world, ever disobeyed and escaped, and no man ever will.

And how can it be otherwise? The bodies of animals are found, by analysis, to consist of certain elements; these elements are found to exist in the vegetable, as well as animal food, which they consume—otherwise it would not be food; and the same elements are found in the soil out of which the vegetables grow. These elements in the soil then, fifteen in number, constitute the food of your crops, (with the exception of what is derived directly from the atmosphere;) but they exist there only in limited quantities, and every successive crop which feeds upon them, of course, takes from them what is necessary to its growth, and makes the soil just so much poorer. The deteriorating process may be very gradual, and may scarcely be perceived, but it is going on, and the time is coming round, and that at no distant day, when it will have done its work—and the deluded man, how can he escape the consequences? He is a robber of the soil, and though he toil like a slave, it will avail him nothing, for the day of retribution has come.

But there is another section to this law, viz: that whenever your soil, in its native state, is deficient in certain elements, which renders it undapted to particular crops, those elements must

be supplied, or you must suffer the consequences, if you attempt to raise those crops upon it. As an example, look at yonder wheatfield, the crop all flat upon the ground. What ails it? The soil is deep, black, and apparently very rich. Do you say that it grew so stout—that the crop was so large and heavy it could not stand up? I tell you *no*, that is not the reason. Why should the simple fact of the straw being large, cause it to lodge, if it is strong in proportion to its size?—And as to its being heavy, the heads are not half as well filled and heavy as they are, upon good wheat lands, with much smaller straw, and of course it should be *less* liable to lodge, on that account.

The truth is, that while the soil is very rich in certain elements, it is very poor in certain other elements which are necessary to give strength to the straw, particularly in silica, or sand, which you know is deficient in all vegetable moulds. Sand, melted with potash, forms glass, and it is the chemical combination of these two elements which forms the glazed coating upon the straw of wheat, and pervades its organization, stiffening it, and enabling it to stand upright. But for this, it could never rise from the ground at all. It is true that some varieties of wheat are more liable to lodge than others, but no variety will lodge badly upon a good wheat soil.

And why are the heads so light, as well as the straw so frail? Plainly, because there is a deficiency of certain mineral elements in the soil, (such as lime, phosphoric acid, &c.,) which are essential to the perfection of the berry.

Other soils have a superabundance of one of these very elements, being almost all sand, and are deficient in vegetable mould, which was so abundant in the case just mentioned. Both deficiencies may be supplied, as will appear in the progress of our remarks. In their present state, however, without any supply of these elements, there are certain crops which find appropriate food in each of these soils, and in fact most crops in the former; but beyond these, if you attempt to go, until the deficiency is supplied, it is at the peril, not only of the loss of your profits, but of your labor.

And there is another section to this law, viz: that lands in their native state, ordinarily deemed productive, may, by good husbandry, have their productiveness increased to an almost indefinite extent—doubled, trebled, and even quadrupled; and the outlay required in the ameliorating process, will meet a far higher reward than that which was expended in the first purchase and subsequent cultivation—at least one hundred per cent higher. This may startle you, but wait a little, and we will see.

Is it not plain that, in doubling the productive power of your land, you get the additional one-half, which would thereby be added to your crop, for a trifling outlay, compared to the cost to you of the other half, (which now constitutes your entire crop)? All the additional cost which

the additional product will require, will be the interest on the capital expended upon the soil, in improving it, and the trifling additional expense involved in the harvesting, threshing, &c., which being deducted, will leave you a profit of more than one hundred per cent greater than that which you now get on the one half, that is, your entire crop, reckoning the interest on the first cost and subsequent improvement of the land, and the entire expense of cultivation, which is almost as much as it would be with double the product. And it will appear, in the progress of this essay, that the expense of doubling the productive power of our ordinary wheat lands, is far less than most farmers have imagined.

But our farmers generally, so far from aspiring to these high rewards, thus placed within their reach, have, by their bad husbandry, even forfeited those which their lands, kept in their natural state, would have yielded them. Take, for example, the average yield of the wheat crop of the State, for a series of years, which, according to statistics drawn from the most authentic sources, is but a fraction over ten bushels to the acre, not certainly more than half what the land was capable of producing, when first put under cultivation. This, you will say, has been owing, in part, to the ravages of insects and rust. But when free from these calamities, fifteen bushels to the acre, taking the whole State over, would ordinarily be considered a good yield, which is very far below what our lands were originally capable of producing, and which, according to Prof. Johnston, is only just half the present average yield of the wheat crop of Scotland. And the same distinguished agriculturist adds, that what has been done in Scotland, may be done in New York, judging from the character of the soil of the two countries, and also from the fact that the annual prize crops of New York, are larger than those of either England or Scotland; and we may add, that what can be done in New York, can be done, nay, *has been done*, in Michigan.

And it is by no means certain, that the loss to the farmer by insects and rust should be set down to the account of his *misfortune*, rather than his *fault* as a cultivator of the soil. We are strongly inclined to the opinion that he is not entitled even to this consolation, and for the following reasons:

To say nothing of the fact, that the wheatfields of Michigan were never visited by the insect in the first settlement of the country, nor until they had become partially worn, is it not enough to make out a strong case, that when this enemy did come, those fields, scattered here and there, which had recently been put under cultivation, of a strong virgin soil, or which had been raised to a high state of cultivation by thorough farming, *escaped its ravages*, while all others around them were destroyed? In one of those calamitous years, we had a forty-acre field of wheat, which was totally uninjured, and which yielded an aver-

age of twenty-five bushels to the acre; and it was the only field of wheat in the region which was not destroyed. But it was strong, new land, this being the first crop, and well put in, while all around, the land was partially worn. The wheat was of the white flint variety.

We know a farmer in Oakland county, who has not failed of a heavy wheat crop, in a single instance, for the last fifteen years, his lowest average in any one year being twenty-three bushels and a half, and his general average for the whole time, being over thirty bushels to the acre, as his farm book shows, while, at the same time, the wheat crops all around him have been destroyed for years in succession, and for the whole time have scarcely averaged ten bushels to the acre.—But his land has been subjected to higher cultivation, perhaps, than that of any other man in the State.

Dr. Fitch, in his celebrated essay on the Hessian Fly, well and truly remarks, that not unfrequently the wheat on the lighter and thinner portions of a field, is totally destroyed, while that upon the heavier and stronger portions of the same field, escapes uninjured, and these portions often alternating with each other. And who, that has been familiar with the ravages of this insect, has not observed similar phenomena?

We might go on to multiply instances of a similar import, almost indefinitely. And to what do they all amount? Why is it that this subtle enemy is commissioned to do its work upon one field, and not upon another—upon one man's crop, while that of another, close by its side, and put in at the same time, is left unmolested? Why, if it be not that, in the one case, the plant has been well fed, and thereby endowed with a vigor of constitution which enables it to withstand the assaults of the enemy, and in the other, not? Those fields which escape injury, do not escape attack; that is not it—insects are in them, in swarms, but the plant is fortified against them, and triumphs over them.

Thus severely, it would seem, have the great mass of our farmers been punished for their disregard of the law which governs the conversion of the soil into wheat, and with Dr. Fitch we would say, happy will it be for them, if they are thus scourged into a better system of husbandry!

And there are also very good reasons for the opinion that rust is sent upon the same errand. Who does not know, that there are certain soils on which wheat is always expected to rust—particularly those which are made up of deep vegetable mould, which has but little lime and other mineral elements in its composition? And who does not know, that there are certain other soils, on which wheat is ordinarily regarded as secure against the rust, and that these soils have but a comparatively small proportion of vegetable mould in their composition, while they abound in mineral elements, particularly lime?—These are facts familiar to every intelligent farmer.

Another fact of the same import, and equally conclusive, is, that deep plowing which brings up the lime, and other mineral elements, from the subsoil, is equally a preventive of rust. The individual above alluded to, as having been so successful as a wheat-grower for the last fifteen years, has not been troubled with rust in that whole time, but he has plowed very deep, and brought up the subsoil, and to this he ascribes his exemption from a calamity which has often destroyed the wheat crop all around him.

Another fact, equally to the point, is, that the application of certain mineral elements to portions of a wheatfield, as a top-dressing, has proved effectual in preventing rust, while other portions of the same field, to which the application was not made, were destroyed. Whether the lime, in some instances, or the potash in others, which has proved thus effectual, or any other mineral element thus applied, operates to neutralize the deleterious effect of any particular element already in excess in the soil, or whether absolute deficiencies are thereby supplied, or both, the effect shows that nature's laws have been set at naught.

There are still other facts which stand out in bold relief in the history of wheat-growing in the West, and which have an important bearing upon this very point. Who does not know, that all our great wheat crops have been consequent upon severe drouths, which caused universal alarm, and a general lamentation over the certain expected failure of the crop, and that the effect has uniformly been to check its growth, lessen the burden of straw, and increase the yield of wheat, which has come in with a well-filled head and plump berry, entirely free from rust?

The same effect is said, by our most intelligent and thorough farmers, to be produced by sowing wheat thick, say two bushels to two and a half, to the acre, the uniform result being small and bright straw, well-filled, though short heads, a plump berry, and increased yield; and what observing farmer has not noticed this effect of sowing thick?

Now, we think an explanation of these facts may be given, which will show them to be in perfect harmony with those above narrated, from which it seems evident, that rust is a consequence of the deficiency of certain mineral elements in the soil.

Is it not manifest, that the roots, which spread themselves out near the surface of the ground, can take up little or no nutriment in a drouth, there being no moisture, and that what nutriment the plant gets, must be taken up by those roots which penetrate downwards into the earth, below the influence of drouth, where there is little else than mineral elements for them to feed upon?—Does not this fact, then, (the effect of drouth on the wheat crop,) known and acknowledged by all our farmers, come in to the direct and powerful support of the conclusions drawn from those above given.



Again, who does not know, that the thicker the crop stands upon the ground, the less the roots spread themselves out near the surface, and the more they incline downwards into the earth, and that this gives the plant a larger supply of mineral elements?

Not that there is a redundancy of vegetable mould, or organic elements, (gaseous elements,) in our ordinary wheat lands; but, on the other hand, in respect to many of them, the reverse is the fact; but *with* them, a proportionate supply of mineral elements is indispensable.

From these varied considerations, then, is it not sufficiently manifest, that upon a perfect wheat soil there can be no rust? and that, wherever this calamity occurs, there is a deficiency of certain elements which are essential to the perfection of the wheat crop? It is true, that there is occasionally a season when rust prevails to a greater or less extent, almost universally, but not more universally than bad husbandry prevails. And always a manifest distinction is made, the crop upon some farms being totally destroyed, upon others partially, upon others still it is but slightly injured, while some, here and there, escape the calamity entirely; and to what are we to ascribe the distinction? Manifestly to the difference in the soil.

Not that we suppose every farmer to be capable of such a nicety of discrimination in respect to soils, as to enable him, in every instance, to bring his land up to the standard of a perfect wheat soil. But we may safely say, that by making a suitable use of the powers of observation which God has given him, he may come so near to it as to be measurably secure against this calamity.

The individual above alluded to, as having so successfully escaped calamity from insect and rust, says, in reply to certain interrogatories we propounded to him: "I have said, and firmly believe, if the farmer fails to raise a good wheat crop *every* year, on a good wheat soil, it is chargeable to his own slovenly and imperfect mode of cultivation. I have not failed," he continues, "for fifteen years. Some of my neighbors say, my good luck has rendered me so confident, they wish I might fail once."

Are these things so? Then how wofully do those farmers deceive themselves, who suppose that they are the victims of misfortune, and console themselves with the thought that they are suffering calamities which they could not help, not dreaming that they have the slightest cause to reproach themselves for having brought these calamities upon their own heads!

Suppose, then, you try the experiment—obey the law, give to mother earth her due, and see if she will not pour you out a blessing; such as you will scarcely have room to receive.

Do you say you would like to—that the thing looks very plausible, but still, that you are a little dubious—a little afraid to run the risk of a failure? Timid soul! What are you afraid of? A

*fraid to obey the law, and yet not afraid to venture upon the consequences of disobedience!*—Deluded man! One would suppose you had suffered those consequences sufficiently already, and that your very fears and apprehensions would drive you into the opposite course.

In the event of a failure, the calamity would indeed be very great. In making the experiment, you would be necessitated to make your land a hundred per cent more productive than it now is; and if, after all, the experiment should fail, and insects and rust should be just as troublesome as before, what a calamity it would be! The consequence would be, that another ten bushels would be added to your wheat crop, even upon the supposition that the experiment fails totally, and insects and rust continue their ravages as before—and that all your crops would be doubled, and that too, with very little additional labor, and that your profits would be increased more than one hundred per cent—and what a calamity that would be! Hitherto, the farmers of Michigan, generally, have toiled like slaves, in defiance of the law, in their devotion to wheat husbandry, and have not earned quite as much as they would have done if they had been at work out by the day, reckoning the price of wheat at an average of five shillings per bushel, and making due allowance for the use of the land—and, as a consequence, long years of disappointment, embarrassment, vexation and woe, have had to be endured. But if they should try this experiment, and make a failure of it, they would be relieved of all their troubles, and rise at once into a new condition of things. That would be the sort of calamity which would come upon them.

And is the risk sufficient to deter you from entering upon an experiment, the *success* of which will put you in possession of so ample a reward?

Seriously, is there not something in this matter deserving your attention. O, it is enough to make one's heart ache, to look abroad and contemplate the present and past condition of the great mass of our farmers, as contrasted with what it might have been, and may still become!

Do you say, that you would be glad to avail yourselves of the advantages thus offered, but that you cannot afford the expense of the necessary improvement of the soil, especially as you are already in debt? Far better can you afford it, than you can afford to get along without it. How well you can afford to get along without it, and what the prospect is of ever being freed from debt, and standing up a free man, your own sad experience as a wheat-grower, will teach you. But it may startle you a little to be shown, as we proceed, that it will require a less expenditure to enjoy all these advantages, than is required to keep up the present ruinous system.



Among the means to be employed for this purpose, we would enumerate, first, *deep plowing*, not only as opposed to shallow plowing, but to the whole system of summer-fallowing, and twice and thrice plowing, for wheat.

Nothing can be more ruinous to most soils, especially to such as constitute our best wheat lands, than the summer-fallowing system as practiced by our farmers, the whole tendency of it being to drive off, into the atmosphere, the organic elements of the soil. And here allow us to explain to some of you, what we mean by the organic elements of the soil. If, then, you will take a portion of soil, dry out the water, weigh it, and then subject it to intense heat, you will perceive that it has lost in weight from two to fifteen per cent, and that it has changed from a dark to a reddish color. What it has lost in weight, has been driven off by the heat, into the atmosphere, in the shape of gas, just as a large proportion of the substance of a stick of wood, consumed in the fire, goes off into the atmosphere in the shape of smoke, which is gas. Well, the portion which is thus driven off, constitutes what we called the organic elements of the soil, and that which remains, constitutes its mineral elements, corresponding to the ash which results from the burning of a stick of wood. The organic part which has thus been driven off, consists of hydrogen, oxygen, nitrogen, and carbonic acid. These gases were drawn originally from the atmosphere, and their effect is to impart lightness and porosity to the soil, and give it a dark color, this last effect, however, being from the carbon alone.

How, then, can it be otherwise, than that, by turning up three or four inches of the surface soil, to lie exposed to the burning heat of a summer sun, its organic elements should be dissipated? And how manifest is it, that the oftener the process is repeated, the more speedily the work of ruin is accomplished!

And there is a delusion about this matter, which deceives the unwary husbandman, and leads him blindfold to ruin. The first effect of this ruinous system, is to increase the crop, the mechanical effect being to make the soil more porous, at the same time that it is more exposed to the chemical action of the atmosphere. And the process of evaporation being gradual, the organic elements may not become so reduced, for a series of years, as materially to affect the growth of the crop. But still it is going forward, and the time is hastening on, when they will be so reduced; and then, no mechanical or chemical effect of frequent plowing, can make up for their loss. The consequence is, that crops fail, and the deluded man wonders what ails them; and just as likely as not, that, fearing he has not been thorough enough, he will add another plowing, and thus add still greater barrenness to the soil.

And most of our wheat lands in Michigan, even in their virgin state, are deficient in the very elements which are thus driven off. Upon lands

having a deep vegetable mould, the same danger of exhaustion from this source does not exist.

Deep plowing cannot bring back the elements which have thus been driven off by shallow and frequent plowings, but it can stay the evil, by turning the surface soil so far under, that, if left undisturbed, their escape will be arrested, and there are other means of bringing them back, to accompany deep plowing, of which we shall speak in a subsequent part of this essay.

But there is another class of elements which deep plowing will restore, viz: the mineral elements, which, as we said, constitute the portion of the soil which is left, after being subjected to intense heat. These elements are lime, potash, soda, magnesia, iron, chlorine, manganese, sulphur, silica, alumina, and phosphoric and sulphuric acids. Two of them, viz: lime and phosphoric acid, seem to be more readily exhausted in soils devoted to wheat husbandry, than any others, and for two reasons. First, they are carried off with the crop, in common with the others, and never returned. Very seldom is so much as the straw returned, and the grain never. But of the mineral elements which enter into the composition of the kernel, these are the chief, and lime enters somewhat largely into the composition of the straw, and thus it is, that large drafts are made upon them both, by each successive crop, at the same time that they frequently exist but in small proportions in the soil.

There is, moreover, a constant tendency in lime, and some other mineral elements, to sink into the subsoil. Thus have the productive properties of many a man's farm gradually sunk down into the earth, below the reach of his tillage, there to remain until brought into requisition to enrich his more fortunate successor—more fortunate, only because better versed in the great principles upon which depends all his success as a cultivator of the soil. And in addition to this, it may be remarked, that the subsoil consists, almost exclusively, of mineral elements.

To enumerate all the instances of the wonderful effects of deep plowing, in renovating exhausted soils, which have fallen under our observation, would be impossible. A few only can be mentioned:

Last year, an individual in Hillsdale county, a clothier by trade, took a notion that he must have a farm, and made a purchase of one in the neighborhood, which was pretty effectually run down. Being a novice in the business, he sought advice of a neighbor, who was a scientific as well as a successful practical farmer, as to the best mode of cultivation, and was told, that if he would not throw away his labor, he must plow deep. He accordingly put his plow in deep enough to turn up the subsoil, and thus he plowed twenty acres of a twenty-five acre field, five acres of it having been plowed shallow, before he made the purchase. It was all sown to wheat, and the crop taken off at the late harvest, the deep plowed portion averaging twenty-five bush-

els to the acre, and the shallow plowed only about half as much.

Three years ago, an individual purchased a farm near the village of Dexter, so completely worn out that he was laughed at, and called a fool for giving five dollars an acre for it, altho' there was a good proportion of it improved, with buildings, &c., and although so near a good market. He was told that he could not live upon it, and might as well not throw away his labor in making the attempt. He said it appeared to be naturally good, strong land, being a sort of clay loam, but that it had been skinned over, with one yoke of oxen, until nothing more could be gotten from it, and it was regarded as worthless. But he put on his big team, and put his plow in ten inches deep, and his first wheat crop averaged him twenty-seven bushels to the acre; and he remarked to us, that he had never had a poor crop upon the farm.

An instance not less strikingly to the point, we met with in Buffalo. A. Bryant, Esq., of that city, remarked to us, that the ground on which his nursery now stands, was so worn and exhausted when he bought it, that it was deemed absolutely worthless for agricultural purposes, and his first crop of oats scarcely grew six inches high. But he put his plow in to its utmost depth, and followed it with another plow in the same furrow, and then he had crops as stout as they could well grow out of the ground.

Since Mr. Linus Cune, the great wheat-grower of Oakland county, commenced his system of deep plowing, fifteen years ago, the average of his wheat crop has been more than double what it was before, taking one year with another, thro' the whole time.

Such are some of the instances of the beneficial effects of deep plowing which we have met with in our travels, and they are but specimens of many others, equally striking, which might be enumerated. But these are sufficient for our purpose—enough to show that the wealth of a man's farm—his productive power—is, to a great extent, lost to its owner, who seeks it no more than four or five inches beneath the surface of the earth.

But here arises the objection with which we set out upon this branch of the subject, viz: that deep plowing is so expensive an operation, that a man of ordinary means cannot go into it.

And is this plea? Do you say you can not go into it because you cannot raise team enough? And what can you go into? Can you go into a system of summer-fallowing? If you can, and do your summer-fallowing at the proper time, you can, as a general thing, go into a system of deep plowing, and with the same team; for seldom have we known a season, in this country, in which there did not come on a drouth just about the time the great summer-fallowing operation was going on, which packed the ground so hard as to make it almost impossible to plow it at all. We have known three yokes of oxen to

be put to a single plow, to turn a furrow four inches deep, and they had hard work enough of it at that.

And this very system of summer-fallowing, has brought your land into this very condition—a condition to be affected in this manner by a drouth. We have shown you how it operates to expel from the soil its organic elements. We have spoken of their effect in giving looseness to the soil; and the consequence of their expulsion is, that the mineral elements which are left behind, settle and pack down into so hard and solid a state, as to be almost impervious to the plow.—Such is the effect of this wretched system upon the soil.

But suppose you should have a real good time of it for summer-fallowing, even in that case, it will cost you more to put in your wheat upon that system, which requires at least two plowings, than upon the new system, which requires but one plowing.

One of the individuals above-named, keeps a regular farm book, and upon looking it over, not long since, we took occasion to foot up the items of expense incurred in putting in a twelve acre field of wheat, exclusive of seed, which was plowed ten inches deep, and passed over with the cultivator twice, and dragged; and the entire expense amounted to only two dollars per acre. And who of you ever put in an acre of wheat upon the old system, for two dollars, even when you had a good season for summer-fallowing?

Say not, then, that you cannot plow deep. If you have team enough to summer-fallow your land in a dry time, four inches deep, then you have team enough to plow, generally speaking, ten inches deep at the time when it is required to be done. But if you have not team enough for either, it is a very easy matter for you to increase it by hiring, or exchanging, if you are not able to buy; and if there is no other way, you can safely do it upon the credit of the certain additional advantages it will bring you.

And suppose you have to run over a less extent of territory—had you not better put in fifty acres of wheat, and make a clear profit of from five to ten dollars on every acre, than to put in two hundred acres, and make an absolute loss on it, just for the sake of the honor of it? Can you afford to pay so dear for such a distinction?—But you are too late in the day, even for that.—The time has been, when the man who could count up the greatest number of acres in wheat, was the biggest man in all Michigan; but the time is coming round, yea, has already come, when such a man is regarded as the biggest blockhead. Dismiss, then, this foolish pride, plow half as much and twice as deep, and you will find yourself far better able to accomplish your task than you now do, and the one-half you now cultivate is as much as the true system of rotation will admit, as we shall see. But that word, "can-

not," O how it sounds! "I *can't*!"—leave such talk to children.

O, it is *soul-sickening*, it is *amazing*, to see to what extent the great mass of our farmers are wedded to a system so enslaving and so ruinous—a system which wears out the energies of both man and beast, under the scalding heat of a summer sun, and all for nothing, and worse than nothing!

There are other ways in which deep plowing produces its effect, besides the one mentioned.—It facilitates the downward progress of the roots, giving them access to the mineral elements below, as well as to those which are turned up, and thus places the crop beyond the influence of drouth, at the same time that all its advantages to the crop are secured, without its disadvantages. It also opens the way for the free admission of air and heat to a greater depth in the soil, and in various other ways exerts a beneficial effect.

It would not, of course, be proper, however, to turn up the subsoil to an equal depth in all soils, alike. A light, sandy soil, for instance, would probably not be benefited by it. But no soil will be injured by loosening the subsoil with a subsoil plow, to almost any depth, and most soils would be greatly benefited by it. In none of the instances above cited, was the subsoil plow used. The depth of the furrow should vary, of course, with the depth of the surface soil. It must be a pretty deep, strong surface soil, which would require a depth of ten inches at the first deep plowing. In the shallower soils, the happiest results would not be realized by plowing so deep the first time, and in some instances, the crop, the first year, may not be so good for it, too much of the subsoil over-lying the surface soil. The good effect, however, will follow, upon intermixing the two in subsequent years.

It should be borne in mind, however, that neither deep plowing with the common plow, nor subsoiling proper, can be practiced to any sort of advantage where stagnant water is retained in the subsoil, as it is in all clay subsoils. As the expense of thorough draining is considerable, and it cannot readily be done at once, a very good temporary expedient is, to plow the lands in the direction the water would naturally run off, so arranged that the dead furrows will be about three rods apart, which are to be deepened and cleaned out with the plow and shovel, after the wheat has been sown, to the depth of eighteen or twenty inches. This has been found to be effectual in removing the stagnant water.

Another means to be relied on in bringing up our lands, is a *rotation of crops*, particularly of wheat with clover, manured, upon our light lands, with plaster. And here we would remark, that although, for the sake of convenience, we speak of the effects of deep plowing and clovering, separately, yet, generally speaking, the two causes combined produce the effect, for those who plow deep, generally, turn under clover.

We have spoken of the ruinous tendency of the old summer-fallowing system, to drive off the organic elements of the soil into the atmosphere, and promised to tell you how to bring them back into the soil again. It is by means of the clover plant. At least the greater portion of them may thus be restored. If you will burn this plant, in a dry state, you will find that a greater portion of it has evaporated into the atmosphere, in the form of gas, and that but a small proportion of it remains in the form of ash. All that portion which went off into the atmosphere, was derived from that great reservoir of these elements, and most of it through the leaves, the greater portion of it consisting of carbon, in the shape of carbonic acid. It has been proved, by repeated experiments, that common air, after having passed through the foliage of a growing plant, is robbed of its carbonic acid, that portion of the atmosphere having been attracted and absorbed by its leaves as it passed. And thus it is that most of the carbon (charcoal,) which goes to make up more than half the bulk of all vegetables, is supplied. But few plants seem to have the capacity to absorb and appropriate food from the gases of the atmosphere, to the same extent as the clover plant.

And thus does this noble plant perform its high functions, spreading its foliage to the breeze, arresting the fugitive atoms as they pass, incorporating them in its own organization, and when turned under, giving them back to the soil again, and thus a fertility is often imparted to the soil which it never knew before.

Nor is this the only way in which the clover plant performs its office as a renovator of the soil. Not only does it seek its food in the fleeting winds, but sends its long tap root far down into the earth, sometimes to the depth of three, and even four feet, there to drink in those mineral elements, such as lime, potash, &c., which it craves for food, and which are thus brought up and added to the soil, so that this plant performs, in its measure, by means of its roots, the same office for the soil which deep plowing does, imparting to it the same elements, and from the same source.

Some have expressed the apprehension, that the ultimate effect of clovering would be to increase the bulk of straw, and lessen the yield of wheat. As we have seen, such an effect results only from there being an undue proportion of vegetable mould in the soil, and a lack of mineral elements, such as lime, potash, phosphoric acid, &c. But, from an analysis of clover and wheat, by Dr. Lee, and others, it appears that all the mineral elements except silica, are found to be far more abundant in the clover than in the wheat plant. The following table shows the proportion in each, according to an analysis instituted by the gentleman above named. According to this analysis, there needs to form both the seed and the straw of an acre of each (of ordinary yield,) of



|                  | WHEAT.  | CLOVER. |
|------------------|---------|---------|
| Phosphoric acid, | 17 lbs. | 18 lbs. |
| Sulphuric " "    | 2 "     | 18 "    |
| Chlorine,        | 1 "     | 7 "     |
| Lime,            | 17 "    | 70 "    |
| Magnesia,        | 13 "    | 18 "    |
| Potash and soda, | 24 "    | 77 "    |
| Silica,          | 115 "   | 15 "    |

Thus it appears, that all these mineral elements, except sand, the clover plant supplies more than the wheat plant takes away, and one of them, which, perhaps, is the most important of all, viz: lime, it supplies four times the amount which the wheat crop requires. And these elements are drawn, to a great extent, from a depth where they previously lay in an unavailable state. There is a deficiency in the quantity of silica, or sand, which the clover plant furnishes, but in this there is no deficiency in our ordinary wheat lands, except that it exists there in an insoluble, and therefore unavailable state. But if the clover plant furnishes the material to dissolve it, it does the same thing as to supply it, and this is just what it does. Potash is the very element to bring it into requisition, and of this element the clover plant furnishes three times as much as the wheat crop requires.

While the clover thus largely exceeds the wheat crop in the mineral elements it contains, it also furnishes a somewhat larger amount of all the organic elements, drawn mostly from the atmosphere, viz: carbon, oxygen, hydrogen and nitrogen. Of nitrogen, the clover crop contains two and a half times as much as the wheat crop, and this is an element more frequently deficient in the soil, more difficult to be supplied, and we may add, more important to make the other elements available, than, perhaps, any other, although it is found only in the small proportion of 32 lbs to an acre of wheat.

From this analysis, the reason why clover exerts so powerful an agency in imparting fertility to light, sandy lands, more especially, is sufficiently manifest. It shows, also, why it is that the first crop of clover may be removed for hay, and the second turned under, and not only not impoverish the land, but enrich it.

Here, then, you have, in the heavens above, and in the earth beneath, the materials for enriching your lands to almost any extent you may desire, and they are offered to you free as the air you breathe, without money and without price. You can have them for the mere taking of them, and what blessing can you ever have without the trouble of taking it?—even salvation, free as it is, cannot be had at a cheaper rate than that.

As you have seen, you can avail yourself of the mineral elements of the subsoil for your wheat crop, for less than it will cost you to do without them. And you can have the organic elements, which have taken wings and hid themselves away into the atmosphere, captured, chained by chemical affinity, and brought back in triumph to the soil, by means of the clover plant, at

just as little cost—all except a small portion of them, which is supplied through the roots.

But you say you are not able to go into a system of clovering, because you are not able to buy seed, and await the result—and just so you said about deep plowing, because you was not able to raise a team. But you see you was able, and all that was necessary was for you to think so—and it is just so in regard to your ability to buy clover seed. Let us see—can you make a shift to raise six shillings? If not, you had better give up farming and go into some other business—probably you would do much better to work out by the day. If you can raise that amount, you can buy clover seed enough to stock two acres of ground, from which, another year, you may gather seed enough to stock thirty acres. Or, if you cannot raise six shillings, can you raise eighteen pence? That will buy seed enough to stock half an acre, which, next year, will give you seed enough to stock seven acres and a half, and the year after, you can stock a hundred acres. Yes, with an outlay of eighteen pence in money, you can have a hundred acres to clover in three years, and that will be the entire outlay, for the benefit you will derive from the clover in the meantime, in pasture and hay, will, without interfering with the annual crop of seed, more than compensate you for all the labor you may bestow upon it, and you will get your eighteen pence back into the bargain. A system of clovering then, will pay its own way from the start, independently of the subsequent advantages it will bring you.

But just take a glance at those advantages.—Upon the old system, you throw away the use of your land one half of the time, at the same time that it is constantly running down; whereas the new system, while it is constantly increasing the productive properties of your land, gives you the use of it the whole time.

To prevent a failure of the clover crop, from lack of germination, or from the effects of drouth in the early stage of its growth, and to secure to the young plant a vigorous growth, the seed should be soaked in tepid brine, 15 to 18 hours, then rolled in plaster, sown upon the wheat field and rolled in, in the spring. The rolling will greatly benefit the wheat crop, by pressing the roots down, and packing the surface. Dragging it in, would also be highly beneficial to the wheat crop, if it is unthrifty. So says one of our best farmers.

Upon the true system, your land is sown to wheat every third year, to be seeded the same year to clover, which is to occupy it the two intervening years. As the second crop of the last of these two years, is to be turned under, preparatory to the wheat crop, it will give a year and ten months to the clover, and a year and two months, out of the three years, to the wheat crop.

Now mark: the three years, devoted in this proportion to clover and wheat, would, upon the old system, produce just a crop and a half of wheat, two years to a crop being required. Bu

a crop upon a clover sod, with the clover turned under by deep plowing, will produce more than a crop and a half upon a summer-fallow, on our common wheat lands; and, of course, a year and two months, upon this system, will produce more wheat than the whole three years upon the old system.

A farmer in Oakland county, who has carried out this system more fully than any other within our knowledge, has thus increased his wheat crop almost three-fold—about trebled it.

And, besides all this, there is the saving of the expense of putting in and harvesting the half crop of wheat, out of the crop and a half which the three years gives you, upon the old system, for you get a larger amount of wheat from the one crop, and of course save all the labor and expense bestowed upon the additional half crop which the old system gives you, and which saving, added to the profits of the one crop upon the new system, would strike the balance still more largely in favor of the new system.

Thus you see, if the year and ten months devoted to clovering is not taken into the account at all, farther than it is subsidiary to the wheat crop, you will be, beyond all comparison, the gainer, by going into a system of clovering.

As we have seen, upon the old system, the business of wheat-growing scarcely pays its way, whereas, under the new system, it rises high up in the region of absolute profit—all that is thus added to it per acre, being, with trifling deductions, just so much clear gain.

The profit on an acre of wheat, upon the new system, would of course vary with the native strength of the land, and the degree of culture which has been bestowed upon it. According to the farm book of one of the individuals above named, the average of his wheat crop upon a certain twelve acre field, managed very nearly upon this system, has been forty-three bushels to the acre, for the last twelve years. His book also shows, that the entire expense of putting in the crop, including the seed, has not exceeded two dollars to the acre. But suppose we call it twenty shillings to the acre, and add as much more for harvesting, threshing, &c., making five dollars to the acre outlay. Suppose the price of wheat to be six shillings per bushel, the avails would be \$32.25; from which deduct the five dollars outlay, and two dollars per acre for the use of the land a year and two months, and you have the snug sum of \$25.25 left, clear profit.—Do you say this is an extreme case? Not by any means as extreme as persons who have only seen the working of the old system, would be apt to imagine. But admit it to be so—make all the deductions you can—whittle down the profits one-half, and is there not enough left to give the new system immeasurably the advantage over the old? We will merely add that the soil of the field above alluded to, is a clay loam, and yielded about fifteen bushels to the acre when the ameliorating process was commenced.

And then, when you come to add the profits of the year and ten months devoted to clover, the difference between the two systems becomes so great, as to place them in direct contrariety to each other, so far as loss and profit are concerned.

Some have even gone so far as to say, that the clover crop is as profitable as the wheat crop.—This is doubtless true under the old system, but not under the new. But still, the avails of the clover crop would make no inconsiderable figure in the grand aggregate of results.

Just consider, that by this system you make your farm a great stock farm, as well as a great wheat farm, almost two-thirds of it being constantly in grass, and only a little more than one-third of it in wheat—and thus, in case of the failure of the wheat crop, you have other dependences on which to rely.

The value of a crop of clover is estimated at five dollars per acre for pasture or hay, and about the same for seed. But a clover crop devoted to seed, can be pastured till the middle of June, and then again after the seed is gathered; or the first crop may be taken off for hay, and the second left for seed, in which case the profit per acre could not, ordinarily, be less than seven or eight dollars—but this would be just seven or eight dollars per acre more than has ordinarily been realized from the wheat crop under the old system, if statistics tell the truth, to say nothing of the loss of the use of the land one-half of the time.

In addition, then, to the immensely greater profit upon your wheat crop, under the new system, you have all this extra profit, of from five to seven or eight dollars per acre each year, for the use of your land between the wheat crops, which, under the old system was thrown away, and you have it for the mere taking of it.

You see, then, how much less it will cost you to go into a system of clovering, than it will to try to get along without it, *as much less*, as the entire profit of your clover crop, together with the immense profit which is added to your wheat crop—and can you afford to keep up the old system at such a cost?

In a letter recently received from an individual who has thoroughly tested both the old system and the new, a reply is given to the inquiry, whether the first crop of clover cannot be removed for hay, and the second pastured the first year, and turned under the second, preparatory to the wheat crop, and the land at the same time be constantly improving. The reply is, not only in the affirmative, as we expected, but that removing the first crop for hay, is better for the land than pasturing it the whole time, as we did not expect. The reason given is, that "the roots of clover are much larger when suffered to grow for hay, than when pastured, and consequently that they contain more elements of fertility to be decomposed in the soil." We are aware, as he remarks, that this is the opinion of some of our most distinguished agriculturists; but we are inclined to

the opinion, that if it can be fairly made out, that it is *as well* for the soil to remove the first crop for hay, as to pasture it, it is claiming quite enough for the benefit derived from the increased size of the roots. This view of the subject is in harmony with the conclusion we derived above, from the analysis of the clover plant.

In regard to the effect of turning under clover upon prairie land, there seems to be some difference of opinion among those who have practiced it; but there would probably be no difference of opinion in regard to its beneficial effects, even upon the deepest prairie soil, if it were turned under deep enough. We know a farmer upon Prairie Ronde, whose expectations from turning under clover were disappointed, but he turned it under only four or five inches deep. We know another, upon Genessee Prairie, and another still, upon Portage Prairie, whose highest expectations from it have been fully realized, their wheat crops having been vastly increased by it; but they turned it under some ten inches deep—and that made the difference. And even when clover is turned under shallow, upon such soil, however injurious it may appear to be the first year, the good effects of it will doubtless be experienced in subsequent years. That it should be prejudicial the first year, when turned under shallow, is no more than might be expected, especially in a dry season. Indeed, clover turned under shallow, upon any soil, will be injurious to a crop the first year, if the season be dry, there not being moisture enough in the soil to decompose it; but more especially might such be expected to be the effect upon prairie soil, which is naturally very loose and porous.

From the analysis of the clover plant above given, as compared with that of the wheat plant, is it not manifest, that the former supplies the very mineral elements needed for the perfection of the latter, in which prairie soil is deficient—descending downwards into the earth, and there seeking them out and bringing them up? It is true, there is one exception, silica, or sand, being supplied but in small proportion by the clover plant. But then there is no lack of this element in most prairie soils, to meet the exigencies of the wheat plant, if brought into requisition—what is wanting, is something to dissolve it, and this very element, as we have seen, is largely supplied by the clover plant.

It is true, that the clover crop, turned under, gives to the soil a somewhat larger supply of organic elements, or those elements which predominate in vegetable mould, (and which are already in excess in prairie soils,) than the wheat crop takes away. But it must certainly be more than an offset to this, that, at the same time, it gives mineral elements, (the elements in which prairie soils are deficient,) in a *far greater* proportion, so that, on the whole, there is a large gain of these elements to the soil.

We may remark, in this connection, in reference to the system here recommended, that it

fits the land for an equally increased production of any other crop than wheat, as corn, oats, barley, &c. And we may further remark, that by turning under the clover sod in the spring, (of the year wheat is to be sown,) a rich crop of corn may be taken off, and the land be left in a good condition for a wheat crop. The corn crop, however, cannot be removed, upon a large scale, in season for putting in wheat, although it may be done to as great an extent as most farmers embark in the corn crop. To obviate this difficulty, some farmers have planted the rows of corn eight feet apart, sown their wheat between them, and harvested the corn afterwards. A still better way, is first to cut up the corn and stook it up, several rows in one. The spring plowing should be deep. And those who have been thorough, cultivating the land and keeping it clean, have said, that they realized as much corn as they would to have planted the rows the usual distance, while the labor and expense of putting in the wheat, has been reduced to the mere matter of cultivating it in.

We have said, that upon all our lighter soils, the clover crop should be manured with plaster, and we may add, that there are few soils that are at all adapted to wheat-growing, upon which a dressing of plaster would not be beneficial to the clover crop. Upon the lighter soils, it is indispensable, and upon all soils it is highly beneficial, except those which produce this crop in sufficient luxuriance without it, which are rare.

It has been generally thought, that the application of plaster directly to the wheat crop, was not beneficial. "Plaster makes the clover, and clover makes the wheat," has been the motto; but some recent experiments seem to show that the general impression on this subject, is, to some extent at least, incorrect. We know of three or four of the best farmers in the townships of Dexter and Lima, Washtenaw county, who have satisfied themselves, from repeated experiments, that a dressing of plaster increases the yield of the wheat crop three or four bushels to the acre. On some soils, however, the crop might not be benefited by the application. Every farmer should try the experiment on a small scale.

The use of the drill in putting in wheat, seems to be attended with highly beneficial results, and should, we think, be adopted, wherever practicable. Wm. Burnett, Esq., of Washtenaw county, foots up the expense of putting in wheat with the drill, as compared with the ordinary method, and makes a difference of about 7 shillings per acre in favor of the former, and says that his drilled wheat was much better than his undrilled, altho' he did not thresh it separate. The drill he used was manufactured at Ann Arbor, and cost only twenty-five dollars. Mr. B. remarked, that it worked well on land somewhat stony and stumpy, the teeth being strong enough to stop the team when they met an obstruction.



Col. F. W. Curteneus, one of the most intelligent and successful farmers in Kalamazoo county, in reply to certain inquiries we made of him, by letter, in respect to the use of the drill in putting in wheat, says: "My firm convictions are, that, in ordinary seasons, the excess of wheat obtained from the use of the drill, over the broadcast mode, will defray the entire expense of putting in, harvesting, and threshing the crop;" and adds, "men may write me down crazy for making such an assertion, yet figures which never utter falsehoods, uphold me in it."

Among the numerous instances which have fallen under our observation, however, we have found considerable difference in the degree of superiority which the drilled wheat exhibited over the undrilled, upon different farms, even in the same neighborhood; but uniformly there was manifestly some superiority, and generally a very marked one. In but few cases did we observe apparently as small a difference as in a field of wheat, part of it drilled and part of it undrilled, upon the farm of A. Y. Moore, Esq., of Prairie Ronde. It was harvested, threshed, cleaned, and bagged in the field, all by one operation, with his mammoth Harvester, and he found, by exact measurement, that the drilled portion yielded a bushel and a peck to the acre more than the undrilled. Striking a medium between the two extremes, we think it safe to calculate on a difference, including the saving in putting it in, of two dollars and fifty cents per acre in the avails, in favor of the drill.

If no more than that had been added to the proceeds of the wheat crop, under the old system, it would have ushered in a new era in the history of wheat-growing among us, for then the business would have risen just so far up in the scale of profit.

One of the material advantages claimed for the use of the drill, in addition to the above, and reasonably so, is the security it affords to the wheat crop against winter-killing, the kernel being covered deep, which gives it a deep-set root, and the plant standing in a furrow, which is constantly filling up, and thereby constantly deepening the roots. It also secures the germination of the seed, so that much less is required.

In regard to the proper time for sowing wheat, many farmers make great mistakes. The seasons are very variable, and sometimes the variation is so great as to make late early and early late. These variations make what are called early and late sowing often quite hazardous. In July last, we saw two fields of wheat upon Prairie Ronde, located on opposite sides of the road, the land being similar in quality, and the preparation and putting in the same, but the one was sown the latter part of August, and the other about the 10th of September, or soon after. But the difference in the two fields was very striking, the early sown promising a yield of twelve or fifteen bushels to the acre, and that sown the 10th of September thirty bushels. In the fall, the early sown field

looked much the most promising, growing very rank, but in the winter it was all killed down to the ground, which was covered with its lifeless remains as with a mat. It came up again from the root in the spring, but never recovered its vigor. The season, it will be remembered, was an uncommon one, greatly favoring the growth of vegetation, and continuing so till late in the fall. The season previous was directly the reverse, and wheat sown thus early did well. We met with a similar instance in Cass county.

It may be said, that feeding early sown wheat down, will operate as a preventive of any such consequences. It doubtless would prevent its being killed down, if fed pretty close, but we deem it impossible, upon the principles of vegetable physiology, to feed it down close without some injury to the crop—how much it is difficult to know, of course, but doubtless much less than to have it killed down to the root. The leaves are the lungs of the plant; they are also the stomach, or laboratory, in which the process of assimilation is carried on—that is, after the first stage of its growth, and when deprived of them, how can it be possible that the plant should not suffer, notwithstanding all the advantage it may derive from the enlargement of its roots?

It is, moreover, to be considered, that no large wheat-grower can possibly make a raise of stock enough to make much impression upon his immense wheat fields, after they have attained to a luxuriant growth, as they always do, before the idea of feeding them down begins to be entertained.

Equally calamitous, and even more so, has late sowing proved to the wheat crop, and it is getting to be pretty well understood by our farmers, that if their wheat does not come forward so as to spread itself pretty well over the ground in the fall, they run a very great risk of losing their crop by rust. This, if our argument be correct, will not be the case when the soil is put into the right state. But as matters now stand, the prospect of a failure is reduced almost to a certainty.

In view of these considerations, it would seem manifest that a medium time for sowing wheat, should be chosen. That medium we deem to be from the 10th to the 20th of September, in this climate.

In regard to the preparation of the seed, something may be said. That steeping it in brine, and then rolling it in lime is a very decided advantage, we have no doubt. That it is a preventive of smut, even when smutty wheat is made use of, is the testimony of all who have tried it. That it should operate, at least to some extent, also as a preventive of rust—that is, if a sufficient quantity could thus be applied—is rendered probable from the considerations already given.

And then, its effect upon the growth and perfection of the plant is decidedly beneficial, both salt and lime being the best of fertilizers for wheat. Hence it is observed, that wheat, from

seed thus prepared, presents a much more vigorous growth, insomuch that its superiority over wheat by its side, from seed not thus prepared, is plainly visible. We have met with wheat-growers who had satisfied themselves, by a series of experiments, that such a preparation of the seed made a vast difference in the yield of the crop. D. B. Brown, Esq., of Ann Arbor, estimated the increase of yield, resulting from such a preparation of the seed, at one-third. This, to be sure, is too great a difference to expect in ordinary cases, but we can readily conceive that, upon some lands, it would be equal to that proportion of the crop.

That harvesting wheat at a much earlier stage than has been customary, is a very decided advantage, we have no doubt. Experiments have placed the matter beyond question, that wheat harvested in the doughy state, will weigh much heavier, and make more and better flour, than when it stands until it is dead ripe; and in addition to this, the straw is of considerable value for stock, although it is far more valuable to be returned to the field and plowed under, as is practiced in England and Scotland, and by here and there an individual in this country, and should be by all.

In reference to the effect of cutting wheat, at this stage, upon the yield, J. Hannam, Esq., a farmer of Yorkshire, England, has made a series of experiments, which place the matter in a very striking light. As the result of these experiments, he found that wheat harvested three weeks before fully ripe, yielded eight pounds more to every one hundred pounds, than wheat which was fully ripe—that is, almost five pounds to the bushel. Suppose only three pounds to the bushel are thus saved, to this is to be added the loss from shelling, which is also saved, and the increased value of the flour.

Wheat designed for seed, however, should, by all means, be suffered to stand until fully ripe, a degeneracy of the plant being the certain consequence of making use of unripe seed. An intelligent farmer of Oakland county, says, in a published statement, that he formerly made use of unripe seed wheat, and always had smut, but for several years past, he has been in the habit of letting his wheat, designed for seed, stand until fully ripe, and he has had no smut since he commenced the practice.

We hardly need add, that seed wheat should be entirely clear of the seeds of all foul stuff. This will require some trouble, but no labor can be more usefully bestowed, as the experience of all wheat-growers testifies.

We have said, that the system of wheat-growing here recommended, will make your farm a great stock farm, as well as a great wheat farm, and thus, in the event of the failure of the wheat crop, you would have other alternatives on which to rely. And as the clovering is to be made subservient to wheat-growing, it is important to in-

quire what kinds of stock would be most conducive to the same end.

And to this inquiry there can be but one answer, viz: that the stock for a wheat farm are, first, sheep, and, second, young stock, embracing both neat cattle and horses.

The working ox and horse drop a great portion of their manure out of the field. The dairy cow does the same, and, in addition to that, carries off in her milk, never to be returned, some of the most important, and, at the same time, most easily exhausted elements of the soil, particularly the bone-forming elements, providence having taken care that the mother's milk shall partake largely of these elements, for the formation of the bones of her young.

In this way, old pastures, on which dairy cows have fed for a long series of years, become so far robbed of their bone-forming elements, that cows feeding upon them have become affected with what is called the bone disorder, which consists of weakness of the bones, from want of the proper elements of nutrition in their food to keep them in repair—which disorder is readily cured by administering bone dust. A few years ago, the milkmen of Paris undertook to get up a counterfeit kind of milk, but unluckily, these dabbles did not get any bone-forming elements into it, and the consequence was, that all the children in Paris, who were fed upon it, became affected with the bone-disorder, insomuch that they could not stand upon their feet.

These bone-forming elements, the principal of which are lime and phosphoric acid, constitute the chief part of the mineral elements which enter into the composition of the grain of wheat, and of course their exhaustion from the soil by dairy cows, must be fatal to that crop.

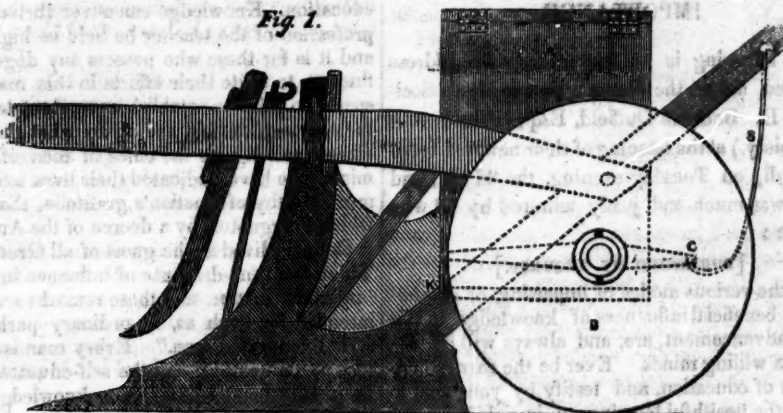
The rearing of young stock, is far less prejudicial to the soil, than either the working ox or horse, or the dairy cow, from the fact that their manure is all dropped in the field, and nothing is carried off in the form of milk. Still they make something of a draft upon the soil, for the elements necessary to the formation of their own bones.

In the case of sheep, still less is abstracted from the soil, never to be returned. Indeed, nothing is taken off—all is left upon the field, except what little is necessary to the formation of the bones of the lambs of the flock, and of the wool, which is scarcely appreciable. And furthermore, according to an analysis given in Dana's work on manures, the dung of the sheep contains a little more than three times the amount of mineral elements which are to be found in that of neat cattle. These we suppose to be the reasons why sheeping land forms so good a preparation for the wheat crop. In addition to this, sheep are highly useful in keeping land clear of foul stuff, and, to a certain extent, even of grubs.

At the same time, the proceeds of no other kind of stock will yield a larger return, or more readily command cash.

## DRILL APPENDED TO THE PLOW.

Fig 1.



### WM. CROSDALE'S PATENT SEED DRILL.

The manifold advantages of drilling-in wheat, over the usual method of sowing broadcast, are now universally conceded by the informed practical farmer, and it has long been a desideratum to find a simple, convenient, and effective apparatus for drilling, at a price which would place it within the reach of all. This drill is offered to the agricultural community, with the confident belief that it will fully meet this want. Adapted in its construction, not only for drilling-in wheat, &c., but also for planting corn and other seeds, and so arranged as to be attached to the common furrowing plow, and to perform perfectly its work, while the indispensable process of plowing is going on, without any additional labor, it must be apparent that it has great advantages over any other seeding machine yet invented.

Corn may be planted with these drills, in hills of one, two, or four feet apart, at the first striking out, thus saving the cross-furrowing, and also the labor of dropping. Drills can also be made to order, to plant corn in hills at any distance apart that may be required.

These drills are now set to sow one and a half bushels of wheat, weighing 60lbs. to the bushel, to the acre, in furrows ten inches wide. It will also sow wheat broadcast, perfectly, by attaching the spreader directly under the wheat cavities.—Full directions for changing the quantity per acre, with other information, may be found on the inside of the lid.

JOHN G. BRENNER,  
41 Market-st., Philadelphia.

The above is accompanied with certificates of numerous persons who have tried this drill, in which they say, that "it works to perfection."

Price \$12.50.

For the Michigan Farmer.

### CYPHERING A LITTLE ABOUT CROPS.

LE ROY, Calhoun county, Dec. 2, '50.

Mr. Isham:

Sir: Better late than never, I enclose you a one dollar bill.

I don't know that I have anything very important to communicate to you, or your numerous readers; but I have come to the conclusion that the ground you have taken in regard to wheat-growing, will soon become a prevalent idea. The past year, we have had an over-abundant crop of wheat—have glutted the mills, and got low prices. I venture to say, that the same amount of tame hay, well cured, will give us a greater remuneration next spring, than the same number of acres of wheat. I believe that the same number of acres of coarse grain will do the same. But that is not to say we shall raise no wheat—by no means; but we will begin to cipher, by division—raise a little of every common crop, and then we shall be sure to hit something, instead of depending, to our sorrow, on wheat, wheat, wheat. We will give a good fair supply of each, with better prices. An over-abundant crop, of any kind, always depreciates its value.

I have conversed with those who have never taken your paper, and I find they are coming to the same conclusion. The evil is working its own cure. We must not depend too much on any one particular crop.

Most respectfully yours,  
C. L. NEWKIRK.



## Educational Department.

### FREE UNIVERSAL EDUCATION—ITS IMPORTANCE.

The following is an extract from the address delivered before the Detroit Young Men's Society, by D. Bethune Duffield, Esq. (President of the Society,) at the opening of their new and beautiful Hall, on Tuesday evening, the 3d ult., and which was much and justly admired by all who heard it :

[PUBLISHED BY REQUEST.]

"But the various modes of imparting, or extending the beneficial influences of knowledge, in this age of advancement, are, and always will be, obvious to willing minds. Ever be the earnest advocates of education, and testify by your zeal to spread the healthful blessings of knowledge, your full appreciation of those inestimable gifts she has conferred upon you. Seize every opportunity to extend it by your pen, your lips, and your example; and shrink not from the burdens (unrequited though they seem to be,) of any office that may enlarge your ability to do good service on its behalf. Be bold and fearless champions of all legislation that tends to advance science, art, or literature, and especially avow yourselves the friends, at all times, and on all occasions, of the *Common School*.

Our government, it has often been said, is emphatically one of experiment. There never has been such an one before upon the earth, and few safe precedents can be cited for its rule. Very many fair hypotheses have already been tested and proven false, and not a few established as true, while others yet remain to be decided upon in the progress of events. As there may be failures and disappointments here, as in every practical inquiry, how very important that there be a thorough and fearless search after those principles which constitute the vital elements of the Republic! And among these, we believe, it is now universally conceded, that the corner stone of this republic, or rather the rock upon which it is to be builded safely, is the intelligence of the people. This can only be secured by the system of Free Schools, which every true patriot must now rejoice to see taking root over so large a portion of our land. The recent popular vote on this subject, in the largest State in our Union, furnishes strong proof of the powerful hold this institution has taken upon the hearts of the people. There is, in fact, no art so godlike, or which approaches so near to creating power, as the education of young minds in truth; and, strange to say, there is hardly any labor so poorly appreciated as that of the teacher. Justly, but to our shame has it been said, that the boor who vociferates over his team, is better paid than the moral and intellectual guide

of the children, in most of our country common schools, and the failures of incompetent teachers are constantly multiplying and perpetuating misapprehensions among us, as to the real value of education. Knowledge can never thrive until the profession of the teacher be held in high regard, and it is for those who possess any degree of influence, to unite their efforts in this matter, and spare no pains to establish competent teachers in the common schools, and to do what they can to elevate and dignify the office of men of superior mind, who have dedicated their lives to a work far more worthy of a nation's gratitude, than that for which Polygnotus, by a decree of the Amphytionian Council, lived as the guest of all Greece.

There is no one destitute of influence in this all-important matter, and these remarks are not only intended for such as, in ordinary parlance, are styled "educated men." Every man is educated to a certain extent and the self-educated man is frequently master of far more knowledge than he who carries his Latin diploma in his pocket. The man who can read by slowly spelling out his words, is in advance of his neighbor who is yet ignorant of his alphabet, and consequently has the power of imparting to that neighbor the means of acquiring an unlimited amount of knowledge. If then, you would serve your country well and successfully, guard the suffrages of a free and happy people from the ensnaring arts of the demagogue, let nothing deter you from exercising an honest and anxious care for the *Free School*, and especially for the *COUNTRY FREE SCHOOL*, where the hardy yeomanry are reared, who, altho' they may sup on a mess of pottage only, and clothe themselves in homespun, and sit peacefully around their cottage doors, while discussing national affairs, are, nevertheless, the *One Mighty Power* that sways the destinies of our Republic."

## Ladies' Department.

### PROMINENT ERRORS IN COOKING

Dr. Drake of Cincinnati, gives the following as some of the vicious modes of cooking which prevail in the community :

With the mass of our population, *bread* of every kind is apt to be baked too soon after the flour or meal has been wetted—that is, before there has been sufficient maceration. But what is still worse, it is scarcely ever baked enough.

*Pastry*, instead of being flaky and tender, is often tough and hard, sometimes almost horny.

*Meats* are often baked and fried, instead of being roasted or broiled, whereby they become impregnated with empyreumatic oil, and not unfrequently charred on the outside. In general, they are overcooked.

*Fresh Meats*, and especially poultry, are commonly cooked too soon after death.

*Soup* is often prepared from parts deficient in gelatine, and abounding in fat, which swims upon the surface, and is much more indigestible than the meat would have been, if eaten in the solid form.

*Eggs* are generally boiled so hard as to render them tough, and many are often fried in fat, to a still greater degree of induration—Fried bacon and eggs eaten with hot unleavened biscuit, containing lard, and then buttered, is a favorite breakfast in many parts of the Valley.

*Vegetables*, abounding in fœcula, such as potatoes, rice and pulse, are often boiled so little, that all the starch grains are not burst open, while those containing albumen, as cabbage, are boiled until that element is firmly coagulated and deposited in the structure of the leaf.

For the Michigan Farmer.

#### TO FARMER'S DAUGHTERS.

MR. ISHAM :

Dear Sir—is there magic in 'how do you do?' Really, a feeling akin to joyousness springs in my heart at the thought of greeting again the numerous readers of the "Farmer." The one "secret of my protracted silence is, an absence from "Pleasant Farm," almost ever since I last wrote to them. And when I tell them that I have been occupied with the pleasant duties assigned a "bride's-maid," for one of my "sunniest" friends, they will readily understand why letters remain unanswered and friends neglected, and will, I trust, admit that I am pardonable, and from their "heart's storehouse," send wishes for the happiness of the highly gifted bride. And, in return, we send you a "heart wish" for high and pleasurable enjoyment during the approaching season of festivities. Stern winter reigns sole monarch to-day—the earth is receiving her beautiful mantle of purity on her bosom, and soon the merry sleigh-bells will awaken gayer echoes in the heart of maiden belles!

But the winter should not be entirely devoted to amusements. The "long evenings" should tell of advancements made in intellectual life, that each season as it passes into eternity, may leave us better qualified to act well our part in this "drama of life. Have we learned to love the changes the seasons bring. The preparation we make to be benefitted and improved by them, will most truthfully answer. Whatever may present for study or amusement, let us not forget the daily reading of Inspiration, and may it effectually teach us the getting of that wisdom which maketh wise the

heart. With many wishes for the prosperity of the "Farmer" and its readers, I must bid them adieu.

Pleasant Farm, Dec. 7, 1850.

For the Michigan Farmer.

#### A WORD TO MOTHERS.

ASHTENO, Dec. 4, 1850.

MR. ISHAM : There has much been written, and by far abler pens than mine, on the education of children. By education, I do not mean schooling, for I consider this the smallest part of education. If you choose to give this a place, it may suggest a few new ideas to some of the mothers who read your paper, and I hope all the wives of the farmers who take your paper read it; for I deem it necessary for every farmer's wife to understand the cultivation of the soil, and it certainly can do her no harm to *understand all the duties pertaining to Farming.*

But to my subject. Every mother will discover, if she have any observation, that children can very early be taught to perform some little duty, and it will always give a child pleasure to feel that it can be useful. Even the little tottler will be delighted to receive a kiss from its father for having brought his slippers, and it will soon learn where to put them in the morning, so that it can find them at night. Some may say this is beginning very early, but we cannot begin too early, if a child comprehends and acts and enjoys; and children are far happier when they find they can be useful. When a mother is employed in her household duties, let her little girl, or boy either, be with her; let them share her labor, even if it gives the mother some trouble. Show them the best way of doing things. Let the children have their own bit of dough, while watching the process of making bread. Let them make their own little loaves and bake them, and my word for it, the pleasure they derive from displaying their tiny loaves to "father," will more than repay the trouble they have given by scattering a little flour, and they will have taken a lesson in the art of baking.

Let children take charge of their own clothes, when ready to wear, and put them away neatly. I would not tax a child beyond what is reasonable, for childhood should be a season of enjoyment; but the knowledge that they have been useful will give a zest to their play, and they are at the same time acquiring habits of industry. It is seldom you find a child who is not fond of employment, either play or some light, useful occupation.

I have already occupied too much of your time in these hints for the early training of children, and yet have scarcely made a beginning. If they are not worth your notice, burn this sheet, and I will not trouble you hereafter. If you think they will serve any good purpose, you may hear from me again.\*

D. M. B.

\* Let us hear again.—Ed.

# MICHIGAN FARMER

WARREN ISHAM, EDITOR.

DETROIT, JANUARY, 1851.

## TAKE NOTICE,

That we have offered a premium of fifteen dollars in agricultural works to the man who sends us the largest number of new subscribers, by the first of April next, and ten dollars to the man who sends us the next largest number, by that time.

And furthermore, that we offer the Wool-Grower for one year, to any man who sends us not less than eight, at eighty cents each—the Michigan Farmer for the current year, or a copy of Mayhew on Education, to the man who sends us a club of not less than fifteen, at 75 cents each, and both of them to the man who sends us not less than twenty-five at the same price—all in advance.

Although we have named the first of April, we would say that now is the harvest time, and those who neglect much longer getting their clubs, will not be very likely to get them at all. A part of the names may be sent at a time, if the whole cannot be gotten at once.

## COL. CURTENIUS' PROPOSITION.

We would say, in reference to the appeal of Col. C., upon the 18th page of our present number, to the subscribers of the Farmer, or a select number of them, to come forward and unite with him in raising a fund to defray our expenses to Europe—that if they choose to limit us simply to an attendance upon the Fair, one-half the amount there specified would probably be sufficient. The presumption on our part is, that this would not be their wish. We would like to hear from our friends upon the subject. In the mean time, we would suggest that it might perhaps be well for each one who feels interested in this matter, to send to the individual we have named, whatever he chooses, to be returned to him, if not so appropriated.

We would further say, that should the subscriptions to the Farmer increase to the utmost of our expectations, there is no danger of our realizing a more ample reward than our subscribers would think us entitled to. At the same time we have consecrated ourselves to the cause, and shall not shrink from any sacrifices to promote it, which it is in our power to make.

## THE NEXT STATE FAIR.

The Executive Committee of the State Agricultural Society met in this city, on the 11th ult., with a view to locate and make arrangements for the next State Fair. Present: Judge Hunt, of Oakland, President; and Messrs. Dort, of Wayne, Leach, of Macomb; Hamilton, of Genesee; Shoemaker, of Jackson; Smith, of Branch; Wright, of Lenawee; Brown, of Calhoun; Spencer, of Washtenaw; Bartlett, of Monroe; and the Secretary, Mr. Edgar, of Kalamazoo, being absent. There were also present, of Vice Presidents and officers of County Societies—Prof. Agnew, of Ann Arbor, and Linus Cone, of Oakland.

The next Fair of the Society is to be held at Detroit, on the 17th, 18th, and 19th of September next; PROVIDED, that the citizens of Detroit raise \$1500 to defray incidental expenses. General Cass is invited to deliver the annual address.

The sum of two thousand dollars is appropriated for premiums, and the list has been extended so as to include a much greater variety of articles than heretofore. The By Laws of the Society have also been overhauled and amended.—Hon. Titus Dort is chairman of the business committee for the current year.

The lists of premiums and of the judges not being ready for publication in season for our present number, are necessarily deferred till our next.

**PATENT OFFICE REPORT.**—We have received, through the Hon. A. W. Buel, the report of the Commissioner of Patents, for the year 1849.—The CONTENTS are, 1st, Finances and Statistics of the Patent Office; 2d, Inventions and Claims; 3d, Examiners' and Machinists' Reports; 4th, Origin and Progress of Invention; 5th, The Motors, or Moving Powers, chief Levers of Civilization; 6th, Proposed applications of the Patent Fund, embracing publications of specifications and drawings, preparation of a general analytical and descriptive index of inventions, and the institution of national premiums for new discoveries and inventions; 7th, Historical notices of inventions, from archives of the States; 8th. On the propulsion of steamers.

This report, containing 626 pages, opens a new era in the history of the Patent Office. The agricultural department, which has, in years past, occupied almost the entire report, is excluded, (to form a report of itself, we suppose,) and the volume, as the above index shows, is devoted to the interesting topics more appropriately apper-



taining to the Patent Office. Nor is this all—the various topics of investigation are treated in a most interesting manner. There is a terseness of style, and an originality and vigor of thought, not often displayed in documents of this kind. To the scientific mechanic, and in fact to every man endowed with the lowest modicum of mechanical genius, this volume cannot but be read with a high degree of interest.

The report from the head of the agricultural department, we have not yet received, nor do we know that it has been issued.

#### AGRICULTURAL BUREAU.

We hope and trust that the establishment of an Agricultural Bureau, as recommended by the President, will receive the prompt and efficient attention of Congress. Why should it not? And echo answers *why!* Is there any great leading interest of the country paramount to that of Agriculture? any which has been so long, so generally overlooked? Nay, is there any one of the great departments of human industry, which is not a mere incident to this, depending upon and growing out of it? Is it the commercial, the manufacturing, the mercantile, the mechanical, or the professional interest? Which of them all does not owe its very existence to this one? And which of them all would not sink into nonentity, if the support it gains from this great interest, were withdrawn?

And yet, in the history of our national legislation, other interests have been magnified and cared for, as though they were the chief, and agriculture were the incident, thus utterly reversing the order of nature.

Admit, if you please, that other interests need protection, and encouragement, more than this, to enable them to go alone—is that a reason why an interest which, in importance, surpasses them all put together, should not be recognized, *according to its importance*, and its claims to consideration be considered? If other interests rise and fall, just in proportion as that of agriculture rises and falls, how can they be more efficiently upheld than by promoting it?

Let this great step be taken—let the national importance of this great foundation interest of the country and of the race, be recognized by the establishment of a national bureau devoted to its interests, and it will not be long before other great steps will be taken, and a new era in our

history, as an agricultural people, be ushered in. In the first place, it will lift this great cause out of the mire and dirt, in which it has lain neglected and trodden under foot, for ages upon ages gone by, and invest it with a dignity and an importance that will command the respect to which it is entitled—and this will open the way for measures for its advancement. The present system of collecting and distributing seeds, and eliciting information connected with the interests of agriculture, to be embodied in the annual report, would be greatly enlarged and perfected. And grants of land, for the endowment of agricultural colleges and schools, will follow—why not? If lands may be granted for other sorts of colleges and schools, *why not for this sort?* And then States will follow an example so nobly set, and vie with each other in carrying out projects so magnificently begun—and thus would the real, solid interests of the country, be permanently secured.

*To Correspondents.*—The present number of the Farmer shows, to say the least, no falling off in the interest imparted to its pages by correspondents, nearly all the communications being of a high order. Two or three came too late, and must lie over. By the way, this is just what we want—we want communications enough on hand, when each number is issued, to fill the next ensuing number, and cannot operate to any sort of advantage till we can have it so. Come, then, sit down, one and all, and spend some of these long winter evenings in giving to the readers of the Farmer the ripe fruits of your experience and observation. Never mind the language—we will take care of that, if it needs any care.

*To Delinquent Subscribers, again.*—You have been blessed with an abundant harvest, and we trust we shall not be overlooked in the dividend you are to make, *because the sum is so small.* It may seem little to you, but it is great to us. You can remit money through the Postmaster free, (though you had better write your own letters, to save him the trouble, his being authorized to frank them;) and, that no excuse may be left, we shall hereafter acknowledge all receipts by mail, in each successive number of the Farmer. Please remember.

Our "Notes by the Way" are crowded out of the present number, by the Essay on Wheat-growing, which occupies about as much space as we are fairly entitled to, and we certainly would not encroach upon the rights and privileges of our highly esteemed correspondents.

# GRAPHIC DESCRIPTION OF WHAT THE WORLD'S FAIR IS TO BE, WITH A PROPOSITION TO THE FRIENDS OF THE GREAT CAUSE AT THE END OF IT.

For the Michigan Farmer.

GRAND PRAIRIE, Kal. Co., Dec. '50.

Friend Isham:

There are few subjects which engross so much interest, just at this time, as the anticipated World's Fair. Almost every ocean steamer which arrives, comes freighted with intelligence connected with the unheard-of preparations which are going on, with a view to consummate the giant enterprize. Royalty first conceived the project, and under the fostering care of royalty it is being pushed toward completion. It will be a proud day for England, when Hyde Park groans under the weight of such a living mass as will then and there be congregated. Almost every nation on earth will be honorably represented on that interesting occasion.

The jargon of languages will be such as to throw Babel itself in the back-ground, and to astonish even the learned blacksmith himself.--What a time, Mr. Editor, is coming! The nations of the earth engaged in one common cause, and that of a pacific character, furnishes the most gratifying theme for reflection that can possibly be imagined.

Kings, queens, noblemen and commoners—just think of it!—lustily engaged in one stupendous struggle for supremacy in agriculture and the arts. Pride of country will give to the strife all the pleasure and suspense which accompanies excitement. We on this side of the Atlantic will dance attendance upon the wires faithfully, with a view to catch the first intelligence which reaches our shores, revealing matters and things transpiring upon the theatre toward which all eyes will be directed. I sincerely hope that America will do herself credit upon the occasion; that she will excel all others, I am not blind enough to suppose. Indeed, among the sisterhood of nations, we are the youngest, and have but just emerged from the political nursery; and consequently we should forbear indulging in too lofty aspirations. We must not expect successfully to compete with the *lathe* of England—the loom of France, or even the plow of Belgium.

We must not despond if the pencil and chisel of Rome, in the hands of veteran painters and sculptors, should create from the unshapen marble a more perfect specimen of statuary, or portray upon the canvass a more life-like semblance of humanity, than our countrymen with half the advantages. Such results are but too evident.—But when we point to our vessels of war, and to our merchantmen, as they float in the docks of Liverpool, and ask for their equals in beauty of

model, or in celerity of movement, will we not enjoy a triumph, then? When we call attention to the masses of gold, just from the mines of our Pacific sister, may we not expect to triumph then? And above all, when our scientific countryman, Paine, by a sort of alchemy, (the result of continued labor and perseverance,) shall, in the presence of the assembled millions, transmute water into light and heat, may we not doubly triumph then? John Bull must keep the Thames insured, or Paine will burn it up! It is not now, as formerly, the acme of impossibility to set fire to a river.

I venture to say, if Solomon, who is supposed to have embodied a mine of wisdom, should come up out of his sepulchre, where he has been sleeping these 2850 years at least, and should take even a birds-eye view of the many wonderful things which Hyde Park will bear upon her bosom in May next, he would be struck dumb with astonishment; and if he ever after recovered his speech, the first sentence he would utter would be, that he was altogether mistaken when he said there was nothing new under the sun. But, Mr. Editor, I have already said more than I intended, and perhaps what I should not; but no sooner had I given my imagination the rein, than she played truant to judgment, and led me this wild-goose chase.

## THE PROPOSITION.

When I sat down to write you, I merely meant to say, that I really hoped that your projected trip to London in the spring, might be consummated, for I am perfectly convinced that you would return with a fund of sight-seeing that would enable you to cater for your readers, for a year at least, in the most entertaining and instructive manner.

To do all this, I am aware, requires means, the absence of which is often a serious obstacle in the way of contemplated enjoyment—and I feel so anxious that this obstacle should be removed, that I am willing to be one of a hundred of your subscribers, to pay the necessary expenses to be incurred in making such a tour of observation.

CURTENIUS.

## REMARKS:

The above proposition is as grateful to our feelings as it is unexpected. It is very true, that our great object in making the trip, would be to "cater for our readers," and it is also true, that we could easily pick up material enough to furnish a pretty voluminous correspondence for the Farmer, for at least a year, if we could spend a little time upon the continent—say time enough to visit Scotland, France, Belgium, Germany, &c. The entire expense could not exceed five hundred dollars, which would be five dollars to each of one hundred persons. But that our "Notes" from

those countries would be "interesting and instructive," as it seems to be supposed by Col. C., we cannot promise; yet, judging from the favor which has been so graciously bestowed upon those hastily gathered up hereabouts, we have a good degree of confidence that we should be able to send home some readable things.

We at first hesitated about publishing the proposition, but as we consider ourself the property of our subscribers, they may do with us as they please; if they send us, we will go, and look about us with all the eyes we have, and see as many interesting things as we can, and set our wits to work to draw all the sage conclusions from them possible.

We might make something of a tour, with a much smaller sum, but it would not be so satisfactory to those who would wish us to go. Let us hear from those who feel interested in the subject.—Ed.

P. S. In case our friends think best to second this proposition, there would be no time to be lost. And that they may have some guaranty in reference to the matter, we propose that they make remittances to Bela Hubbard, Esq., of this city, who shall return the money to the contributors, in case of any contingency to prevent our going, and who, should nothing prevent our going, may audit our accounts when we return.—Ed.

For the Michigan Farmer.

OSHTIMO, Calhoun Co., Dec. 4, '50.

Mr. Isham:

I feel it a duty to say something occasionally to your readers, but whether I shall succeed in amusing or instructing them, is quite another thing. At this time I send you, as I think,

#### A FEW THINGS WORTH KNOWING.

##### SEED CORN

Should be selected in the field. Take that which ripens first, and has two ears on a stalk; the next year you will find that your corn has ripened a little earlier than usual, and you will also find more stalks with two ears upon them than you ever had before—provided always, that you take good care of it, and *that* means, to plow the ground well when in good order, and not before, be it early or late in the season. Give a good coat of long manure, and keep weeds and grass under. I like to plant about the tenth of May, but if the weather is cold and wet, I delay planting even to the 25th, if we do not have suitable weather before.

##### PUMPKINS

Are "first rate" for fattening horses, hogs, and cattle, and when made into pies, they are very, very nice, if we can believe what people say down in Yankeedom. Many persons fully believe that pumpkins dry up milch cows—don't you credit it, but give each cow two good large ones night and morning, and my word for it, that her milk will decrease when you stop. Liberal feeding will be sure to give you more and richer milk. I have tried the experiment for five years, and shall continue to do so as long as I have the pumpkins. The seeds should be selected from the largest and heaviest; the result will be, a larger and better crop—I have found it so.

Only a few days ago, I opened a fine yellow pumpkin, and it measured 4 1-2 inches in thickness, and was very sweet.

##### HAMS

May be well cured in the following manner: Take

- 4 gallons water,
- 6½ lbs. fine salt,
- ½ " saltpetre,
- 1½ " brown sugar.

This pickle is to cover the hams, and the small ones are to remain in it six weeks—large ones in proportion.

##### BEEF

Has been well cured in this way: Take a good sweet cask, put in a sprinkling of fine salt, then a layer of beef, then another sprinkling of salt, then beef, and so on, until finished. Make a brine for one hundred pounds of beef, as follows:

- 4 gallons water,
- 8 lbs. fine salt,
- 3 " brown sugar,
- 1 oz. pearlsh,

and pepper and spice to suit the taste.

Yours, &c.

JEREMIAH BROWN.

THE RIGHT SPIRIT.—The following is but a specimen of the interest which is being taken in the great subjects treated of in the Farmer, by persons not interested in farming—persons of all professions, trades, and pursuits:

FARMINGTON, Dec. 6th, '50.

Mr. Isham:

Sir: Enclosed is \$1 for the Farmer. Although I am not a farmer, I intend to be one of your advance subscribers hereafter, and in a few days I will stir around and get up a club. I like your system of writing "Notes by the Way," and the plan of having a Ladies' department and an Educational department in the Farmer. If I were qualified to write, I should like to contribute some thoughts to the educational department.\*

F. M. DRAKE.

\* You are qualified—write.—Ed.



## EXPERIMENT IN CORN RAISING.

*For the Michigan Farmer.*

Mr. Isham:

Dear sir: Although this is not the season of the year for corn planting and cultivation, yet it has recently been the season for harvesting it, and while things are fresh in memory I think it the best time to write about them, and therefore will give you a short account of my corn crop the past year. My mode of cultivation was new to me, and no doubt will appear so to others, and although the final result was not extra, either way, nevertheless, something may be gained by the experiment:

I planted two lots, one of thirty and one of fifty acres; commenced plowing the ground on the tenth of April, and finished on the eighth of May. I then harrowed the ground very thoroughly, in order to prepare it for the drill; then planted the first lot on the 13th and 14th, and the second on the 21st and 22d May, with Palmer's patent wheat drill.

As soon as the corn came up, so as plainly to show the rows, it was harrowed over with a two horse harrow, one horse walking each side of the row, a few teeth being taken out of the centre of the harrow, to prevent its tearing up the corn.—The next operation, was going through it with a one horse cultivator, twice in a row, and the same operation was repeated; and lastly, I put two horses to a common steel plow, and plowed deep, and a full furrow, around each corn row, covering to the depth of three or four inches in the drill, so that none of the brace roots were to be seen; and then plowed out the middle by another round with the team.

My corn rows were six feet apart, and planted very closely the other way, say a stalk to every six or eight inches, and very frequently two, three, and four together. It should have been thinned out, but I could not get help enough to do it, and go on with other work. My intention was, to have sowed the whole of the ground to wheat, but in consequence of sickness and scarcity of laborers, I was obliged to abandon that project.

A small part of the corn was not plowed out with a two horse plow, and the yield was not so good as on the other part, on which, by plowing a deep and heavy furrow, all the corn roots were cut off, at a distance of from eighteen inches to two feet from the corn, and in a few days the corn appeared more vigorous and healthy than before. Numerous little fibres were created immediately, to supply the place of those cut off, and I am inclined to think that the cutting was an advantage, it causing so many more to be created. The last planting yielded the most bushels per acre, but the land had the most sod upon it. The last plowing was done the latter part of July and fore part of August.

Judging from the whole experiment, I have come to the conclusion, that corn put in with a

drill, 4½ feet between the rows, and stalks thinned out to about ten inches apart, will produce a heavier crop than if planted in hills at any distance.

The labor done upon the eighty acres of corn, was as follows: 51 1-2 days plowing; 29 1-2 harrowing, before and after planting; 57 days with cultivator, and 30 days plowing with two horses. The field yielded, on an average, a little over forty bushels of shelled corn per acre, which is not a large yield, but this year about equal to common crops.

Respectfully yours, &amp;c.,

ANDREW Y. MOORE.

Schoolcraft, Dec. 9, '50.

*For the Michigan Farmer.*

## RAISING CORN—ANOTHER EXPERIMENT.

Mr. Isham:

Dear sir: I have tried the way of raising corn recommended in the Farmer some time ago, and with me it works well. I planted my corn eight feet one way by three the other, on a piece of light land, without manure or clover, plowed in the spring, and planted on the furrow; used the cultivator for the first hoeing—two boys following kept up with the team, and as soon as the hoeing was done, it was plastered lightly. For the second and last hoeing, I used a No. 4 plow, throwing a heavy furrow up to the corn, and plowed the spaces well; cut it up in September, carrying seven rows into one, making a shock on every third hill; plowed and sowed to wheat—had about thirty bushels shelled corn to the acre.

I believe there is an advantage in this way of hilling corn, as it keeps the corn from falling down, and the roots that will grow above, or near the surface, instead of injuring the crop, must increase it, by drawing more largely from the earth the elements needed to perfect the crop.

I have not decided on the plan of sowing wheat after corn, as my crop last year was small, but then it was sown very late, and the drouth pinched it very much. I think yet, that wheat sown early, may do well after corn planted in this way. The ground should be clean, so as not to need plowing, but sow and cultivate in, immediately after the corn is cut up. I have a plan in my mind how I shall plant in future, which is this: Plow deep and well in the fall, (if the ground is not swarded,) ridge not less than six feet apart, one way, and plant not less than three, the other; when the corn is fit to hoe, back-furrow around the ridge with a double team—oxen will do, as there will be a furrow to follow—and when you have gone through your field in this way, finish the plowing between the rows, and use the cultivator as often as may be necessary to keep the ground clean and mellow, until the corn is fit to

cut up—then sow to wheat, and do it well and neat.

### NOW FOR THE STUMP MACHINE.

Get two sticks of timber, twenty feet long and 8 by 8 inches square, for runners, frame them together with two pieces of oak plank, one foot wide and ten feet long; dove-tail the tenons and key them up. These should be placed, one four feet from the end, and the other eight feet, which I call the forward end; upon this end, raise a bent of four posts, two of them to be long enough to raise the top of the plate three feet from the bottom of the runners, and the other post may be eight or ten feet long, and a piece of timber framed across the top; three bents should be placed so that the centre post will be five feet from the forward ends of the runners, and be three or four feet long. Get a good tough log for a roller, ten feet long, sixteen or eighteen inches through; make suitable gudgeons on the ends, and a mortice six by eight inches square through the centre, and frame in a sweep, fifteen feet long, which may be six inches through at the small end; frame a hole over the centre posts of the bents, for the gudgeons of the roller, fasten a common chain to the end of the sweep, and raise it perpendicular, (or a little more so,) and let it rest against the cross-piece; now frame a windlass at the hind end of the runners, with suitable mortises for levers, (a common handspike will do;) fasten the chain attached to the sweep around the windlass, (which should be a tough stick eight or ten inches through,) and then you want a big chain (I guess,) to hitch around the sweep, close to the roller. This chain should be ten or twelve feet long, and weigh sixty or seventy pounds, and have a ring at one end, shaped so that the other end may be drawn through one end of it, while the other end will fasten on to a link. Now hitch on a good yoke of oxen to the forward end of the machine, drive the forward ends of the runners a-straddle of the stump, till the roller nearly touches; dig under the roots next to the machine, if the stump is large, and hitch on the big chain. Now wind up the chain on your windlass, and see if the stump don't come.

Yours, &c.,

RUSSELL COBB.

Hadley, Nov., '50.

For the Michigan Farmer.

MANCHESTER, Dec. 6th, '50.

Mr. Isham:

Dear Sir: I would like to inquire, through the Farmer, of W. A., who in Washtenaw county, has got good merino ewes for sale at from one to two dollars per head? I would like to purchase a few hundred, and my neighbors would like some, also.

I send you the pay for the next volume of the Farmer—also for A. W. Spafford.

Yours, truly,

T. L. SPAFFORD.

### EXPERIMENT IN RAISING WHEAT—RECRUITING EXHAUSTED LAND.

BY HON. J. SHEARER.

For the Michigan Farmer.

Mr. Editor:

The following experiment was made about thirty years ago, on an old field which had been plowed many years, and considered by many people in the neighborhood, as *worn out*. The soil contained about equal portions of clay, loam, and sand, was of dark color, and lay gently rolling, so as to let the water off. The field contained twenty acres, and was sowed to spring rye for my first crop on the field, and it was *very small*. The word *worn-out* then seemed to mean something, to a demonstration. The inquiry was, how long the field had been cropped? The answer was, thirty years, without manure, seeding to grass, or plaster.

This history suggested the study of *cause and effect*. What must be done, was the main question. The farm had been recently purchased, at \$25 per acre, and a heavy payment was to be made, and the crops, with my labor, must do it. On this subject, the mind and thoughts, as well as the hands, were actively employed; and at this crisis, a little book, written by the revered Franklin, gave me great encouragement. Among the useful lessons, I found two applicable to my own case. The first, "do not take hold of the plow and look back;" the second, "He that by the plow would thrive, himself must hold or drive." So it became my good fortune to hold the plow and drive, and while the hands were employed the mind and thoughts were taught to labor also, so that all branches were carried on successfully in this department. The room for my studies was of the classic order, open and airy, ventilated with invigorating and balmy breezes, and carpeted with the beauties of nature, the dimensions capacious, and the light ever durable and brilliant, while the ear was saluted with the most charming music; all these were well calculated to cheer me in my vocation.

Now for the remaining part of the experiment: The following spring, after the snow disappeared, one ton of plaster was sowed on the above field, which gave the grasses which had accidentally seeded there, a rapid growth. The June following, the field was plowed well and deep, then harrowed after, and in August the cross-plowing was finished, and from the 15th to the 25th of September, sowed to white flint wheat, two bushels to the acre.

The next spring, in April, another ton of plaster was sown on the field, the crop was harvested in July, and the yield was fifteen bushels to the acre. The white clover spread itself thickly over the field; the horses, cattle, and swine, were turned in to feed upon it, and gather the scattering heads of wheat, and in August the field was

plowed deep enough to turn the stubble under, and bring up new earth; and again, the same time in September above, the seeding to wheat was performed. The next spring the ton of plaster was sowed as before, and the yield rose to twenty bushels per acre, and the white clover came up to where the cradle cut the wheat. — Again the stock was turned into the field as before, and in August it was plowed deeply, and in September, about the middle, sowed again to wheat, of the same kind, and the yield was *thirty bushels* per acre; and the same *modus operandi* was pursued five crops in succession, and the last crop yielded *forty bushels* per acre. The general remark was, by all who saw the wheat growing, that it was as good as any ever raised in western New York; even the good neighbors, who had pronounced the land worn out, were perfectly astonished.

The land had become so rich that it was thought best to crop with corn, then barley, and seed it down to barley and timothy, 8 lbs. of clover and one peck of timothy to the acre, and it was done, and a great crop of grass and good hay was the result.

That land has undergone rotation, and been fallowed and plastered ever since, and is yet in a high state of cultivation. The soil was naturally good, and well mixed. I sold the farm for fifty dollars an acre, fourteen years ago.

By this history, it is evident that land may be run down, but not worn out, as we have proof from the history of the past that there are lands in many portions of Europe, Asia, and Africa, which have been under cultivation over two thousand years, and are yet in a high state of cultivation, so that the wise ordination of Providence has arranged the properties of the earth in a manner well adapted to cultivation, from the beginning to the end of time, if rightly managed by man—and the whole secret is, to know the best method, and this chemical agriculture will teach; therefore, let no one be discouraged—we live to learn. This is a pleasing reflection. It is the spring of life, and a continual feast. Although time has not allotted to us perfect knowledge of all things, yet we have reason to be thankful for the privileges of improvement while we do live.

#### SEEDING TO CLOVER.

In your last No., something is said in relation to seeding with clover, and various methods mentioned in seeding, to save the seed; all those methods have been tried, and sometimes with success, and sometimes not—depending on the season, land, and seed; often the seed is either damaged in the stack, or mow, or is too old; at other times, the drought, or frost, kills it soon

after it first shoots up; at other times, the soil may be a stiff clay, a yellow sand, or black sand, and muck, all of which must be carefully considered, and will be by the prudent farmer.

The hard, stiff clay should be plowed in the fall, to let the frost act upon it—hence, the next summer will not dry it so hard, as it has undergone a pulverization by the frost. Seed this kind of land in the spring, with oats or barley. It takes the best with barley; if with clover, be sure that the seed will come, and it can be tried before seeding, by putting a little earth in a plate, or small box, sowing some seed thereon, and putting it in a place of the right temperature; if good, it will grow, if not, it will decay. Should the seed be good, wet it with water and roll it in plaster, so that it will separate when cast from the hand.

This method may be practiced on all kinds of soil, with perfect safety. The yellow sand, black sand, and muck, may be plowed in the spring, instead of the fall, and an equal mixture of these soils, may be plowed either in the spring or fall, to suit the convenience of the farmer's business; and the same method is pursued in seeding, with equal success, in ordinary seasons. The last uncommon drought, in May, June, and July, was too severe for young grasses, through a great portion of our country.

Harrowing wheat in the spring, is also spoken of, and seeding with grass at the same time. This has been tried; some seasons it does well, while other seasons it proves an injury. This depends on the drought in the spring, and the growth of the wheat. Should the wheat be large, let it alone, as the roots are large and should not be disturbed; if small, and yellow, harrow it with a light A harrow. Sow the grass seed, and roll the field down—the roller presses the roots of the wheat down, and makes the earth compact, which the wheat plant requires more than any other grain. This also makes an immovable bed for the grass seed, and when rolled in plaster, with the clover, there is no danger of losing it unless an uncommon drought befalls it.

P.S. The above experiment on wheat is to be understood, as not being an infallible guide on all kinds of land, but merely shows how land of that kind can be enriched. The above method of seeding to grass will be found safe and good, for it has been often tried with good success.

Please find one dollar enclosed, in advance for your very useful paper another year.

Truly yours,

J. SHEARER.

N.B. Other modes of enriching land have been practiced, such as seeding and turning under red clover, and by means of various kinds; but this method proved the cheapest, as the plaster was near, and cost but three dollars per ton.

J. S.



For the Michigan Farmer.

### POULTRY.

MR. ISHAM :

Dear Sir—You having expressed a wish that I should continue to give, through your columns, the consequences of my *fowl breeding*, I now frankly acknowledge it has resulted in quite a *fowl business*, which I have the hardihood to openly indulge in, notwithstanding your exalted notions of improvement and high sense of moral rectitude. But why, I would ask, if Phrenology be true, (which I am a case in confirmation of) is one to be condemned for indulging in *fowl propensities* by another who may be constituted with more lofty aspirations?

I send you the weight of some of my fowls, as taken from the yard, without extra feeding; not that I consider them exceedingly large, but certainly of a size worthy of much consideration, in connection with the great desideratum of being of quick growth, hardy, and great layers of large eggs. My May pullets commenced laying in October.

|                                  |              |
|----------------------------------|--------------|
| Malay cock, 17 months old,       | 8 lbs. 4 oz. |
| " hen, 2 years "                 | 6 " 10 "     |
| Dorking cock, 17 months "        | 8 " 2 "      |
| " pullet, 6 " "                  | 4 " 6 "      |
| " cock chicken, 6 months old,    | 5 " 5 "      |
| Kent County cock, 18 "           | 7 " "        |
| " hen, 18 "                      | 5 " 7 "      |
| Dorking and Kent Co. pullet, 6 " | 4 " 12 "     |
| English Game Hen, 18 "           | 5 " "        |
| Malay and Kent Co. cock, 13 "    | 7 " 14 "     |
| " hen, 13 "                      | 5 " 13 "     |

After carefully observing the peculiar qualities of my different breeds, I have concluded to give the weight of only those I esteem as the most productive; the others are but medium size, and not better layers. I do not wish to increase the size of those kinds I have named, being satisfied that my very large hens, (which I disposed of previous to any idea of weighing) were not as constant layers, and more inclined to sit, which their large, clumsy limbs and great weight illy calculate them for; frequently breaking their eggs, and making most awkward nurses. Also, another objection to what I consider an overgrown breed—the heavy, clumsy limbed cocks denuding the hens' backs, bruising the flesh, and producing fever which suspends their laying.

The pleasing results of my experiments in breeding this season, induces me to mention some of the crosses, as it might aid some persons in se-

lecting different breeds to cross upon, but will defer it at present.

I raised over three hundred chickens this season; still I have been obliged to encroach upon my choice selection, for my own use, to supply the demand, rather than dispose of a cull or inferior one, and am receiving orders which I am unable to fill.

Yours very respectfully,

Kalamazoo, Nov. 27, 1850.

P. S. I have a few *choice cock chickens selected* of each variety, yet to dispose of. I have made it a rule not to coop and take to the cars, a distance of 7 miles, at the price I sell them—a less number than six for three dollars; it wouldn't pay.

For the Michigan Farmer.

### TURNED FARMER—LETTER FROM A YOUNG MAN.

HARRIS PRAIRIE, Ind., Dec 7, 1850.

FRIEND ISHAM: I have just taken up winter quarters on the above choice piece of creation, after a six years' imprisonment in one of our western colleges. There is a great deal of the rustic about me, consequently I intend to try and become a good farmer. I have perused and re-perused your Farmer, and find it to answer the purposes of the western farmers better than even the very best eastern Agricultural papers.

I have tried some of the many receipts mentioned in your Farmer, for experiment's sake. Most succeeded; but that for keeping cider from fermenting was a failure. Perhaps the writer did not give us particulars enough.

The ladies of this neighborhood promise you a good dinner, if you ever visit them. All the dishes shall be modelled after the directions found in your Farmer.

The weather is remarkably fine here, and any farmer that has not everything prepared now, is a disgrace to society. I will visit Canada and Eastern New York next spring. If any of my random shots will do any good, you are welcome to them.

Yours, &c.,

CINCINNATUS.

\* Tell us who you are.—Ed.

Recollect, that every man is authorized, and is looked to, to get subscribers for the Mich. Farmer. Members of clubs may have their papers sent to different offices, and a part of the names and of the money may be sent at a time. A noble beginning has been made.

## Horticultural.

### FRUIT CULTURE.

For the Michigan Farmer.

Mr. Editor:

Notwithstanding your paper abounds with numerous plain, practical articles on the cultivation of fruit, and the benefit derived by those that cultivate good fruit, written by those far better qualified than myself to do the subject justice, yet a few more suggestions may, perhaps, benefit some who have had little experience, and who are not yet aware of the pleasure and profit derived from having an abundance of good fruit. The increasing business doing by all our nurserymen, shows that the people of this State begin to realize the importance of the subject, yet how few manage the matter judiciously! Many select trees, without taking into consideration which are the better kinds for market, but more, far more, either from ignorance, carelessness or haste, suffer great loss in transplanting.

We see around us many recently transplanted trees dead, and others in an unhealthy state, caused by not attending to a few plain rules in re-setting.

A tree ought to live, and grow as vigorously after transplanting, as before it was taken from the nursery, and would, if proper care was taken with it. Now we would suggest to all who grow trees for sale, that they furnish brief, plain, printed directions, to accompany every parcel of trees sold. Don't tell us of heaps of compost, or anything else that must be prepared beforehand.—Substitute something else that will answer the purpose, for who ever knew a Michigan farmer prepare compost for setting fruit trees?

It may be said that what is recommended above is unnecessary, as plain directions are contained in all our fruit books and agricultural papers. True, but how few profit by them. Some have not the books, or do not take or read the papers; others are like my farmer friend in this neighborhood, who says agricultural papers do him little good, for when he reads an article which would benefit him, if followed, it is not time then to put it in practice, and before the time arrives, the paper is lost or destroyed, or he don't know where to find the article.

Experience has taught me that there is a right and a wrong way to do things—setting fruit trees in particular.

Some twenty-two years since, I purchased and set about fifty apple trees. They were large, thrifty trees, of five or six years' growth, taken up with great care and set out in the ordinary way—that is, dig a small hole, and if the roots are too long, twist them round, or cut them off with a shovel, then throw the earth back, and tread it down. About one-quarter of the trees died; the balance gave me about a bushel of fruit the fifth year after setting.

Again, two years ago, I set about the same number, of three years' growth; none died, some bore last year, and this year nearly all; and after thinning out to prevent the trees' breaking, and what was blown off by the winds, I gathered about two bushels of fine apples. Here, then, was the difference in setting—one bushel from fifty trees of eleven years growth, and two bushels from fifty trees of five years growth.

#### GRAFTING.

As now is the time for those who have old orchards to graft, to begin to make preparations, I would offer a little advice on that subject also. I would say, in the first place, collect your own scions yourself, and I would advise you to take the following method to obtain them. Go to your neighbor that has good fruit, and knows what he has got, and knows also something of its cultivation; make him a visit expressly for that purpose—don't introduce politics, or religion, lest you become excited and forget your errand; get of him at the time what varieties he has that you want, if convenient; if not, agree with him to put up and label them for you. A few such visits will give you a good selection, that you can depend upon. They will cost you nothing, or at most but a trifle, and in the end you will find it far better than to trust to others.

When the scions are collected, wrap them in a cloth, put them in a tight box, and set them in a dry place in the cellar. When the time arrives for grafting, which is any time when the weather is warm, between the first of April and the first of June—perhaps later; do it yourself, or let the young men; if not, employ some one that you know will do the work well. Let enough be removed at once to make a good top, and a top where it ought to be. There is no danger to be apprehended from removing a greater part, or even the whole top at once, if necessary, provided that the scions set are of good strong wood, of thrifty, growing kinds, and the trees in a thrifty, growing state; and if not, let them alone by all means: prune them, manure, dig around them, scrape and wash them with ley or soap suds, and make them thrifty before you apply the saw.

Yours, &c.

LINUS CONE.

Troy, Nov. 11th, '50.

For the Michigan Farmer.

### A FEW REMARKS UPON FRUIT TREES, TRANSPLANTING, &c.

Mr. Isham:

Every experienced cultivator knows that fruit trees are far preferable, and much more likely to succeed in transplanting, that have been raised in the same latitude, or that it will not answer to bring fruit trees from a more southern climate for a northern location, especially if the trees have been at all forced in their growth. It will answer much better to take trees from a northern to a southern climate. It is well known also, to those who reflect upon the subject, that trees can be grown in a much less time in a warmer climate; but in proportion as their growth is forced, is their worth diminished. Trees also, may be forced in their growth here, and run up to a height of seven or eight feet in two or three seasons, but such trees are, comparatively, worthless. Many do not think of this, but those who have had experience must be aware that it is so.

An apple tree five years old, should not be more than 7½ feet high. It should be well proportioned, stout, and branching low. Such trees are actually worth three-fold those that have been raised in the quickest time possible. If trees are to be taken to a more northern climate than where they have been cultivated, they should be such as have not been forced, and consequently the wood will be more mature, the roots more fibrous, and the trees more stocky, and better prepared to endure a change of climate.

In transplanting trees, they should always be put into a richer soil, instead of a poorer; the reverse of this is usually the case, and frequent disappointment is experienced on this account.

But says one, "we obtain our trees from nurseries, where the trees, of course, are forced to their utmost extent." No, friend—all nurserymen do not adopt this course. Some give their trees time to mature, grow them stocky, keep them in a healthy state, the ground and the trees clean, let them branch out low, and give them a chance to form durable wood; and they will bear transplanting. In preparing trees for sale, of course two years' time saved is a great advantage—it amounts to nearly one-half the value of the tree, all things considered. Many do not think of this, but buy trees where they can buy them cheap, no matter where they come from.—If any are taken in, of course it ought to be such, and not those who are willing to pay a fair price for good trees. Unfortunately, a large portion of those who buy trees, are just such as will buy cheap, and do not stop to consider, until they have found out that they have actually paid dear.

It has been remarked by a shrewd observer, and experienced and successful cultivator of fruit, that "probably not one-half the trees set out survive the third year." This failure is attributable, in a great measure, to the reasons I have endeavored to point out. But it is not merely the life of the tree that is to be taken into account; its shape, its durability, its successful growth, will all tell, in the quality and abundance of fruit produced.

If the above remarks are worthy of consideration, would it not be well for those who wish to set out trees, to endeavor to find such as have been raised with a view to their future worth?

Detroit, Dec., '50.

For the Michigan Farmer,

### ON GRAFTS AND GRAFTING...A CHOICE VARIETY OF THE APPLE.

CLINTON, Dec. 14th, '50.

Mr. Editor:

I had contemplated writing you a short article for the Michigan Farmer; but I fear the subject has been delayed too long for your January number. Yet I will pen a few thoughts on grafts and grafting:

It used to be thought necessary to cut scions in February, for spring grafting; old people used to remark that "they lived better when cut in the dead of winter." For the last twelve or fourteen years, I have spent from two to six weeks, each spring, in grafting, and I can find no apology for such a mode of practice—on the contrary, it is highly injurious. Cut your scions according to the season, usually about the first of April; the time is, just before the buds begin to expand rapidly, if you wish to graft several weeks; if only a few are desired, and they are within your reach, cut them any time before blossoming, and set them immediately.

The reason for late cutting, is this: if cut in February, there are 2 months for them to dry and wither. Scions, if possible, should be kept as fresh as when taken from the tree. Cut your scions, tie each variety in a separate parcel, make the butt ends even by striking them against some uniform surface, then label them; do not trust to memory, and be sure you do it in such a manner that the rascally rats will not destroy them; when so prepared, place them in the cellar with the butts in sand, or loose earth, to the depth of two inches. Look to them occasionally; if the buds are like to expand, take them from the earth for a few days. Cut and preserve your scions in this way, and if well set, my word for it, you will not have occasion to complain of your grafts dying.

The time of setting is not so material as many imagine, if the scions are well preserved. I have set them from January, until the apples were as large as a hen's egg. Grafts will live and grow as late as the sap continues to flow upward; those



set late will not extend as far the first year—after that, they will thrive equally as well.

My receipt for grafting-wax is, to one pound of beeswax, add two of resin and four of tallow.— Sometimes linseed oil is used instead of tallow. In all cases, aim to have it as soft as you can use it, because in our climate there is one hundred chances for it to crack off during the frosts of winter, where there is one for it to melt by the heat of the sun. The latter I have never seen—the former I have, in hundreds of instances. If the weather is warm, keep your wax in cold water while grafting.

While on this subject, Mr. Editor, let me introduce to you, and the readers of your favorite monthly, a variety of apple that we have here. The tree is supposed to be a seedling; this, among others, was obtained from a nursery in Ypsilanti, some seventeen or eighteen years since. The fruit is of a good size, beautiful to the eye and superlatively pleasant to the taste. And what renders it still more valuable, it keeps very readily until August or September of the following year, without losing its flavor, thus enabling one to have a choice variety of fruit the entire year. At some future time, a minute description may be given. I have no doubt, were this apple once known to pomologists, it would become a successful rival to the famed "Northern Spy."

Friend Isham, what say you to the idea of carrying a few of these, of this year's growth, to the World's Fair?\*

R. RANDALL, Jr.

\* We would take pleasure in doing so. By the way, we hope friend R. will let the readers of the Farmer hear from him somewhat oftener than heretofore.— Ed.

For the Michigan Farmer.

#### DEEP PLOWING ON SANDY SOILS.

Friend Isham :

As much has been said relative to deep plowing, and as it has, as far as I have observed, been recommended to every quality of soil, I would inquire, what possible good will it do to plow our sandy lands, (of which there is much in our country,) to the depth of twelve or eighteen inches? I am aware, that all land denominated *sandy* land, is not alike in its composition; some, by analysis, is found to contain a greater amount of clay than was supposed, some rest upon stiff, clayey "hard pan." But the sandy land to which I more particularly refer, is that soft, yellow sand, which seems not to vary much in composition for two or three feet in depth. I have some such, and I aim to plow the furrow seven inches deep, by twelve to fourteen wide; in that way I can turn clover, and every vestige of green stuff, completely under, and I believe, get as good crops as if it were twenty inches deep.

But says one, "I have thrown sand out of my cellar, or well, to the depth of six feet, and vines or clover would grow luxuriantly right on the top of that!" Very well; so have I; but I have raised carrots on this sandy land, that penetrated to the depth of two feet, when it was plowed no more than six or seven inches deep, and the sand appeared just as soft, and as readily penetrated by the roots or by a stick, or even by my finger, below, as through the furrow.

Now, Mr. Editor, I may be wrong—I hold myself open for correction—but really I do not believe such very deep plowing in sand will ever

PAY UP.\*

\* Nor we.—Ed.

For the Michigan Farmer.

#### RUST—ITS CAUSE, AGAIN.

Mr. Isham:

Dear Sir: Having examined Mr. George A. Smith's communication on rust, and having read some, reflected some, and observed some, since my former communication on that subject, I thought I would write once more. Mr. Smith quotes Leibig to prove that rust is actually protoxyd of iron; perhaps it is, and if so, it can easily be demonstrated, and one fact will be gained.

There are, however, many objections to this theory. First, many writers, of whom Loudon is one, consider rust to be a parasitic plant, or fungus, and they give the class, order, genus, and species, and profess to show, by engravings and the magnifying glass, rust in all its stages and operations. And they also say that it requires a certain state of the atmosphere, and other causes, to produce a growth of rust, and when grown, or while growing, it feeds upon other plants, and especially wheat, if in the right stage of growth, causing the berry to shrink by drawing the juice from the straw. And for myself, not being acquainted with chemistry or botany, from what I have seen I am inclined to this opinion; first, rust is always found on the outside of the husk, and not on the inside, nor under the husk on the straw, which would be the case if it came from the inside of the straw. And, second, its appearance, even to the naked eye, is distinct and separate, like nits; and, third, when washed off by rains, or otherwise, it does not cause the berry to shrink, or the straw to become rotten.

This theory may be in accordance with Leibig, for the plant will be nearly like the food it is nourished by, and that may be protoxyd of iron drawn from the earth through the straw. The experiment of Leibig is a good one, but it does not show that rust is more or less in different soils. No doubt the earth used in the experiment did not bring the grain to maturity as soon as the field in which it was tried, and consequently it was struck with rust, and this can be seen, more or less, every year, on mucky spots. You will find that although the wheat upon such land

grows well, and the heads are large, yet, from a lack of something in the soil, it is a long time ripening, and consequently is exposed to rust. I do not think ashes, used as a manure, will produce or hinder rust, any farther than they may help to mature the grain early, and clay has the same effect; hence, deep plowing, especially on mucky land, like Mr. Cone's, by bringing up the clay, causes the wheat to mature early, and is therefore less exposed to rust; but all things fail, sometimes, and rust makes a general sweep, and injures all more or less.

A few remarks about honey dew, and I will close. When I first mentioned honey dew, in a former communication for the Farmer, some persons had never heard of such a thing; but observation had convinced many that there is a difference in dews, especially during the dry weather in the early part of the present season, when it might have been seen, felt, and tasted, on the leaves of the bushes and plants. Now mark, I have always contended that there was no rust except in connection with honey dew. I do not know that the dew causes rust, of itself, but I do know that, without honey dew, neither rain, hot sun, muggy weather, or straw cracking, will ever produce rust. Perhaps honey dew is caused by the mingling of some substance, animalculæ or plant, with the dew; if so, the dew might be analyzed, and something added to science. Let the learned and curious examine.

Yours, with respect,

RUSSELL COBB.

Hadley, Nov. 14th, 1850.

*For the Michigan Farmer.*

### ON BEES...No. 3.

#### SWARMING AND HIVING.

The apiarian or owner should always have his hives in readiness; no application of sweet herbs, salt and water, or anything of the kind, is necessary, nor are they of any value that I could ever discover. A well made, clean, and well ventilated hive, with the inside of the top board, or cover, scratched with a sharp pointed instrument, raising small ridges, and making it quite rough, to enable the bees to hold fast, is all that is necessary.

As soon as the young swarm commence alighting, (which they should be allowed to do in peace without the firing of guns, ringing of cow-bells, or rattling of tin pans,) place the hive into which they are to be introduced, in the shade; if it cannot be conveniently done otherwise, place over it a spread umbrella. Place the hive in a convenient position, in reference to the Young Swarm, upon a table, box, or frame of some kind. Raise the front of the hive half or three-fourths of an inch from the bottom of the board, with a small wedge, and open the ventilators, by drawing the perforated portion of the tin over the holes. In hiving a swarm it will be found convenient to use only the main body of the hive, covering the holes

in the upper one with a piece of board or sheet of tin. The apiarian should always protect his face and bosom with a veil, and his hands and wrists with gloves.

As soon as the swarm have alighted, or the greater portion of them, commence the operation of getting them into the hive. If it is convenient to cut off the branch upon which they are collected, do so—but do it carefully. Carry it to the hive; hold the mass over the front end of the bottom board, at the mouth of the hive; give the bench a slight but sudden jar, just sufficient to disengage the bees. If this cannot be done, hold a broad vessel—a tin pan or something of the kind, under and as near as possible to the swarm; give the limb a sudden jar with the hand, barely sufficient to disengage them; pour them down immediately in front of the hive before they have time to fly off, which they will soon do and again alight upon the branch.

This operation should be repeated three or four times in rapid succession, each time depositing those that drop into the vessel in front of the hive. After we have deposited most of them in this manner, continue shaking the branch to prevent their lighting upon it. They alight frequently in such positions as to make it necessary to use a brush of some kind, to get them into the vessel. A brush of boughs with leaves on—a soft broom, or a counter brush, or perhaps the wing of a fowl may be used.

As soon as any considerable quantity are poured upon the bottom board in front of the hive, they will commence entering it. If they are reluctant to enter, disturb them very gently, by brushing them toward the entrance, which operation may be slowly and carefully continued, until they have all entered, or all but a few, say forty or fifty, more or less; then withdraw the wedge very cautiously, so as not to crush the bees that may be under the edge of the hive, stop up the mouth, or canal, remove the hive to the bee house, then open the canal, place the tin over it, as directed in a former article, and the operation is ended.

Bees should always be very kindly handled, not only in hiving them, but at all other times—a constant and cautious contact with man, and kindly treatment, will soon allay their natural combativeness.

If they are properly hived, as soon as they have alighted, it is the opinion of experienced bee men that not one swarm in a hundred will leave.

It is the opinion of Mr. Weeks, and others who have studied the habits of bees, that not one swarm in a thousand know their place of destination before they leave the parent swarm, (except in cases where they have hung out for a length of time, and may have formed themselves into a regularly organized colony.) Having formed themselves into a cluster, or colony, they send out an embassy in search of a new home. Now, if they are hived immediately after they have alighted, and before their embassy returns, and they are

pleased with the hive the owner has provided, and they are placed in the bee house, they will be very likely to remain. But be this theory true or false, experience has demonstrated the fact, that if they are hived immediately after alighting, and *properly*, and the hive placed immediately in the bee house, they will remain; and it is just as easy to hive them as soon as they collect, and place them in the bee house as soon as they are in the hive, as it is to do it at any other time.

\* \*\*\*\*

Bloomfield, Dec. 7th, 1850.

### THE FARMER AS A FINANCIER.

For the Michigan Farmer.

Friend Isham:

What I wish is, to point out one bad practice of, I fear, a majority of the farmers in this and other—perhaps all—parts of Michigan. It is the practice of buying goods at the store, on credit. Now I am not a disciple of the no-credit school, but to see the credit system carried to such an extent as it is, is truly alarming. I say alarming, and it is so to a man who earns his bread by the sweat of his brow, and, to succeed at all in his business, he must be a financier. This is the time for the commencement of a better state of things. On the anticipation of the next wheat crop, some have already paid 25, some 50 per cent, on the "old score," as it is familiarly called, and given a note, or perhaps a mortgage on the wheat lately sown, for security. Well, the merchant says, "Mr. ———, bring your wife down; we have our new goods, and are selling remarkably low this season."

Sure enough, next Saturday he is there, wife and daughters, to get a ten dollar shawl, or fifteen dollar muff, the old ones bought last fall being out of fashion, or Miss Somebody has a new one, and we have more wheat sown to pay for it than they have. In this way they keep on until after harvest, when the bill of some farmers, owning from eighty to a hundred and sixty acres of land, will amount to from one hundred to five hundred dollars. Now the only remedy for this that I know of, is to resolve to buy nothing but what you can pay for when you get it, and my word for it, at the end of the year your wheat crop may pay the "old score." All you have to do, is to resolve once more not to make a debt at the store, and at the end of the second year, you may have money in your pocket to buy a ten dollar shawl, and if you have, you can get it for seven dollars, and nobody's business.

Perhaps you will say, it is nobody's business if you go it on credit; but here allow me to dispute you, and my reason for so doing, is that three-fourths of the farmers have as much to pay as their wheat crop (and that is all the crop they have,) will bring; it must be threshed and sold immediately after harvest, at whatever price the merchant is pleased to offer—no holding on for a better price, and consequently three-fourths of

the wheat is forced on the buyer at his own price. The remaining one-fourth is in the hands of men who have not mortgaged it before it was harvested, and if they sell, it must be at the same price with the mortgaged wheat, as it is the policy of every man to buy as cheap as possible.—The result is, that I have got to sell my wheat at three-fourths its value, or wait until your wheat is gone. If there should then be a lack of wheat, I can get its full value: hence, it is some of my business.

Sincerely yours,

P—— B——.

Albion, Dec. 5th, '50.

### A NEW DEPARTMENT PROPOSED, OR RATHER THE RESURRECTION OF AN OLD ONE.

For the Michigan Farmer.

Mr. Isham:

I have noticed the progress of the Michigan Farmer, from its first appearance in embryo to its present state of manhood. Not that it has arrived at perfection, but it is making rapid strides for that goal. It has, as has been often remarked by its readers, and as often acknowledged by its conductor, a first rate set of correspondents, who tell their story as if they were driving old Buck and Bright, and not looking round to see who is laughing at their want of tropes and figures.

Really, there is an accuracy in the style of almost every one of them, that would do honor to any periodical not professedly literary.

At present, the farmer is supplied with food of every variety; the "gude wife" also, can there find something to her taste, however difficult to be pleased; the young lady has her department, where she may cull flowers and weave garlands; besides, extra fixings are served at every meal, so that none need rise from the table hungry, except the aspirant for office.

Now for what I am aiming at: As man, woman, cattle, sheep, swine, and goat, all receive their due attention from yourself and correspondents, not forgetting the bee and the rooster—the vegetable kingdom, also, being duly honored—yet there is one class among the rest, of more importance than the whole animal or vegetable world beside, for which I propose to open a department in your paper, and occasionally contribute an article, more to elicit something useful from yourself and others, than expecting to benefit any one by my own pen. Our young men, soon to be the farmers of Michigan, to be our town officers, the prominent men for our county and state offices, legislators, and, I hope, members of Congress, have, in my humble opinion, a strong claim upon every man who loves his own offspring, or the State of his adoption. I think they may be called out to exchange views, to incite each other to strive for that which is good, and shun the evil. They need a moral, in-



tellectual, and operative training, to fit them for the several stations for which they are destined. I believe there is no other way by which very many of our most valuable young men can be reached, but through the medium of the Farmer.

Two things are no longer problematic; first, that there is a growing spirit of inquiry upon the subject of agriculture, accompanied by a better system of farming; and, second, an increasing inquiry as to the true principles of liberty, and a stronger determination to maintain them. And the man who would direct either from their fixed channels, had better first try and turn with a shingle, the Niagara from pitching down the precipice. Provided always, that nothing more is to be said by me upon this subject, unless it meets your approbation.\*

OLD MARK.

\* Good—write.—Ed.

For the Michigan Farmer.

### TOT'S MEMOIRS—FOR CHILDREN.

OSHTEMO, Nov., '50.

Mr. Isham:

Thinking it might be interesting to some of your young readers, (if you choose to publish it,) I will give you the history of some of our pets. By the way, we are very fond of pets. I will begin with Tot:

Early last spring, a friend gave our little daughter a young pigeon, about half fledged, and for two or three weeks she was obliged to put its food into its mouth. By this time, it learned to pick up its own food, and had become very tame, eating from the hand, and the children would put crumbs of bread in their mouths, for it to pick out. They would give him a cup of milk, and Tot would put in his bill, and drink like a little calf. He would follow those to whom he was accustomed, and perch on their shoulders and heads, and always visited the dining room during the clearing off the tables, to pick up the crumbs. Like most pets, he took advantage of our fondness for him, and if he could gain entrance into the store closet, he would trespass on the bread tray, corn and bean basket, or anything that he fancied to eat. Having no pigeons for companions, he soon made himself familiar with the chickens, and other inhabitants of the poultry yard. He was a great bully, and if he did not feel in a very amiable humor, he would not allow any of them to eat near him, or enter a door that he chose they should not.

I have frequently seen him bluster about, and with his defiant "who-o-o," keep a full grown rooster out, and if one persisted in attempting to pass, he would strike a blow with his wing, which would make the intruder repent his temerity.—His favorite was the peacock, who would suffer him to follow, and eat with him, *provided* he did not interfere with his own particular titbits. The peacock seemed rather to tolerate than to love him.

While the pea hen was shut in a coop with her young ones, it was Tot's delight to stand at the end of the coop, and "who-o-o" at her; he took good care to keep away from the front, where she might reach him and chastise his impertinence. Sometimes he would perch on the top of the front of the coop, seemingly to enjoy the anxiety she seemed to feel for the safety of her little ones, until she became accustomed to his presence. And for some time after she was let out, he would tantalize her by picking at her chickens, and then fly out of her reach, and peer down at her so mischievously that one could not but be amused; but at length they became very good friends.

Early one morning, my husband having gone out and left our room door open, I was awakened by a great splashing; on looking to discover the cause, there was Tot, making his morning ablutions in my wash basin!

We had three half-grown kittens, and if Tot did not choose, neither the mother or kittens must sleep or eat. He would pull their ears until they got out of his way, or joined him in play, and then they would have a fine game of romps. They would put their paws around his neck, and give him a tight hug, roll over and over, and if they bit a little too hard, he would slap them smartly, or pick them until they were glad to retreat, or play more gently.

One day Helen found him at the coop, picking the little chickens; she took him up and gave him two or three slaps—he flew away, and did not return until evening, but he was never seen to touch a little chicken again. It was his habit to perch on the kitchen door every night, until he was put into his dormitory. I could relate many more anecdotes of Tot, but my story is already unreasonably long, and I will only give you the conclusion of his history, which is very sad:

One night something attacked him, and wounded his beautiful glossy breast; he would never after sleep in his house, but took to perching between Mr. and Mrs. Peacock. One morning our beautiful Tot was missing; we searched and called in vain, until the children found his feathers scattered at the foot of a stump, a short distance from home. A hawk had been about, for some time, and had probably pounced upon him early in the morning, borne him away, and devoured him.

D. M. B.

### TIME TO CUT HICKORY TIMBER.

For the Michigan Farmer.

Mr. Isham: In regard to the inquiry as to the best time for cutting hickory for rail timber, I would say in June, or any time when the bark will peel easy; and immediately after cutting the timber, remove all the bark, and then the worms will not eat up the rails, and of course they will not rot as soon.

Yours truly, GEO. H. KEDZIO.

For the Michigan Farmer.  
GREAT YIELD OF WOOL

FRIEND ISHAM :

Enclosed I send you two dollars for your very valuable paper, and most heartily wish you success in your great work of throwing light on the leading interest of our State.

Until within two or three years, I have been mostly engaged in raising wheat; but the low prices and the increased exhaustion of soil has led me to the conclusion that the growing of wool is more worthy of my attention, and far more profitable.\* My flock numbers, old and young, 225.

I have 56 Spanish Merino Ewes, bought of Messrs. Jones & Rockwell, of Cornwall, Vt. Also, a Spanish Merino buck, belonging to that class called Guadalupe. He is an excellent stock getter, and is four years old, and sheared between eleven and twelve pounds of wool, washed thoroughly, and clipped short of one year's growth.—I consider him worth \$100. My ewes were washed thoroughly, and sheared short of twelve months from the previous shearing, and although young, (two years old) the age at which they shear less than usual year, yet their fleeces averaged 4 lb., 14 oz. I sold the wool for 40 cents per lb. cash. I raised 54 lambs, which I am now selling, at 4 months old, from 5 to \$10 per head.

I have 51 common or native ewes. I raised from them 43 lambs. They sheared about one dollar's worth of wool each, and their lambs are worth perhaps about one-quarter of my merinos. I am perfectly satisfied that the Spanish Merino sheep are, of all others, the sheep to keep for profit. They are hardy and long-lived, and breed well until they are twelve and fourteen years old. I am always happy to show my flock, and I hope that in your perambulations and rambles, you will give me a call. My residence is 4 miles south of Marshall on the stage road to Coldwater.

F. B. WRIGHT,

Marshall, Nov., 1850.

P. S. In the spring I can spare a few yearling bucks; shall part with them, if any choose, before shearing them. That is a favorable time to buy. No man that is not a first rate judge, should buy a stock buck after his fleece is off. F. B. W.

\* The two should go together.—Ed.

TUSCOLA CO.—LETTER FROM ANOTHER YOUNG MAN.

TUSCOLA Co., Mich., Dec. 16.

MR. ISHAM :

Dear Sir—I take this opportunity of sending for your valuable paper. Enclosed I send you \$1 for the coming volume.

I suppose that this will surprise you, dated from

these parts, where such a thing as an Agricultural paper was never heard of.

This is one of the best portions of our State,—It is just beginning to be settled. The soil is fertile and the location is good. It is principally timbered land (beech and maple) with some pine and hemlock along the banks of Cass River.

I am young, and have not commenced farming on my own hook, but I feel interested in the cause, and I love to read your paper.

ANDREW MAXWELL.

\*Tuscola Co. is bounded north by Huron Co. and Saginaw Bay; east by Sanilac Co.; south by Lapeer, and west by Saginaw Co.—Ed.

MICHIGAN FARMER.

We notice that the eighth volume of this valuable and popular agricultural journal is complete; and its indefatigable editor, Mr. Isham, offers new inducements to subscribers for the ensuing year. Among other things, he proposes to attend the World's Fair, visit the Continent of Europe, and give to the readers of the Farmer the benefit of what he may be able to see and learn on such a tour. Those who are familiar with his "Notes by the Way" in this and other states, will look with interest for the appearance of his "jottings-down" from the old world, and be thereby stimulated to make greater exertions to extend the circulation of the Farmer.—*Perinsular Freeman*.

MICHIGAN FARMER.—The new volume of this excellent and popular agricultural journal commences with January next, when every farmer should have it in his house, as Mr. Isham, the Editor, will visit the great World's Fair in London, and make a tour on the continent of Europe, giving his readers the benefit of a regular correspondence of his "notes by the way."—*Detroit Daily Advertiser*.

MICHIGAN FARMER.—We find the December No. of this valuable agricultural journal upon our table, rich with the fruits of the husbandman's experience. No similar journal in our country is half as valuable as this is, to the western farmer.—*Detroit Tribune*.

That excellent agricultural paper, the "Michigan Farmer," concludes the volume with the December No. The editor, Warren Isham, has exerted his utmost to make this a valuable paper to the farmer, and it is not too much to say that he has succeeded. Every reader of the Farmer welcomes it heartily, and no farmer who knows his own interest will be without it. So send \$1 to the publisher, at Detroit, and get it.—*Coldwater Sentinel*.

As being adapted to the interests and wants of the State, it strikes us that more valuable practical information can be obtained from the Michigan Farmer than from any other, as the able editor, Warren Isham, is indefatigable in acquiring a knowledge of all the successful experiments made in agriculture and horticulture in different parts of the State. His "notes by the way" are well worth the price of his paper.—*Marshall Statesman*.

## RECEIPTS for the Michigan Farmer, from Dec. 6th to Dec. 23d, 1850:

W Buckingham Saline, \$10 75; A A Copeland, Battle Creek, 3; T E Phelps, P M, Decatur, 1; J Shores, Hickville, 1; F M Drake, Farmington, 1; J B Abbott, P M, Grand Blanc, 2; S F Wolcott, P M, Sharon, 1; Wm Verkes, Northville, 1; L P Clark, Austerlitz, 4 50; L Spafford, Manchester, 3; Wm Ferguson, Motville, 2; J Shearer, Plymouth, 1; Saml Bartlett, La Salle, 2; J G Spencer, P M, Brighton, 1; J C Steinman, P M, Livingston, 1; Munia Kenney, Webster, 1; J R Bowers, P M, York, 2; N S Hallock, P M, Northfield, 1; Wm Craig, Unadilla, 9 80; Ira Smith, P M, Big Beaver, 1; D B Webster, Kalamazoo, 1; W E Anderson, Ann Arbor, 1; Geo T Clark, Ecorse, 2; C R Chamberlin, Battle Creek, 1; Hiram Curtis, Flint, 1; J M Kennedy, Buchanan, 1; R A Beal, P M, Plainfield, 5; R Randall, Jr, Clinton, 1; Geo Gale, Moscow, 1; Wm Keeney, Monroe, 1; Timothy Bartlett, P M, Saginaw, 1; Wm Richards, Vienna, 2; David Hicks, Dearborn, 1; Geo Tibbets, Farmington, 1; Geo H Kedzie, Deerfield, 3; W S Russell, Kensington, 1; E R Pond, Coldwater, 1; A B Nicholson, Cassopolis, 1; Wm Smith, Birmingham, 2; H G Wells, Schoolcraft, 2; L Woodward, Rochester, 3; Hiram Brown, P M, North Plains, 16 65; H F Baker, do, 3 35; H W Tuttle, 1; J C Atherton, Flint, 1; Andrew Maxwell, White Lake, 1; Chas V Babcock, 2; E S Homlin, Angola, (la.) 1; Justus Gage, Dowagiac, 8; James Davis, Lima, 12; Ja's G Cox, Logansport, (la.) 1; Elijah Bird, Byron, 1.

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## DETROIT PRICE CURRENT.

|                  |           |                               |          |
|------------------|-----------|-------------------------------|----------|
| Herd's Grass, bu | 200       | Salt,                         | \$1 06   |
| Flax, bu         | 100       | Butter,                       | 14       |
| Lime, bbl        | 70        | Eggs, doz                     | 16       |
| Flour, bbl       | \$3 50    | Hides, lb                     | 3 61     |
| Corn, bu         | 37 1/2    | Wheat, bu                     | 75       |
| Oats, "          | 30        | Hams, lb                      | 6        |
| Rye,             | 37        | Onions, bu                    | 70       |
| Barley,          | 62        | Cranberries,                  | 1 00     |
| Hogs, 100 lbs    | 3 75      | Buckwheat, 100 lbs            | 1 25     |
| Apples, bu       | 37        | Indian Meal, "                | 1 12 1/2 |
| Potatoes,        | 31        | Beef, "                       | 35 04 00 |
| Hay, ton         | 10 12 1/2 | Lard, lb retail               | 7        |
| Wool, lb         | 18 4c     | Honey,                        | 10       |
| Peas, bu         | 100       | Apples, dried                 | 0 00     |
| Beans,           | 100       | Peaches, do                   | 2 50     |
| Beef, bu         | 6 7 00    | Clover Seed, bu               | 4 00     |
| Pork,            | 8 11 00   | Pine Lumber, clear \$20 thou. |          |
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## MICHIGAN BOOKSTORE.

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To be found west of New York. Their assortment includes LAW, MEDICAL, THEOLOGICAL, MISCELLANEOUS, CLASSICAL, and school Books. All of which are offered to the public, wholesale or retail, at prices much lower than heretofore. They also carry on the Book Binding business, and are prepared to manufacture to order, County and Town Record Books, Merchants' Ledgers, Journals, Day Books and other kinds of Blank Work generally, of the best materials and workmanship. Pamphlets, Magazines, &c., bound with neatness and dispatch. A share of public patronage is respectfully solicited.

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Jan

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Or, how a Farmer can become rich—being sketches of life in the country; with the popular elements of practical and theoretical agriculture, and 1200 Laconics and Apophthegms relating to morals, regime and general literature; also 500 receipts, on health, cookery, and domestic economy; with ten fine illustrations, representing the various scenes attendant upon farming, etc.; by John L. Blake, D.D., author of "Biographical Dictionary," "Family Encyclopedia," &c.

The publishers respectfully announce that they have undertaken the publication of this large and beautiful work, with a view to supply a desideratum that has long been felt—a book for every Farmer's library—believing that the venerated author has produced a work that will be worth its weight in gold to every farmer's family that thoroughly peruse it. It is proper to state that Mr. Blake is a practical farmer, and has reclaimed a sterile and worn-out piece of land into a valuable and productive farm—which experience, with his well-known qualifications as an author peculiarly fits him to prepare a book for farmers. The work contains 654 pages, large octavo, with a motto surrounding each page. It is printed on fine paper, and bound in substantial imitation Turkey morocco, gilt back. Invaluable retail price, \$3.

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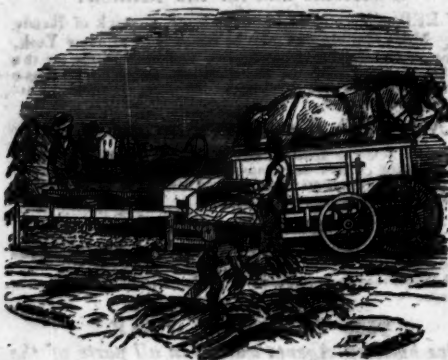
The lightning's may flash, the thunders may rattle,  
He hears not, he heeds not, he's free from all pain,  
He sleeps his last sleep, he has fought his last battle,  
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More than 20,000 copies of the above work have been sold by us, and the demand is unabated. It is allowed by critics to be the most complete and authentic copy of any of the works purporting to be a Life of the Great Man of the age. Retail price, \$2 00.

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**IMPORTED Flower Roots, Agricultural Implements and Machines, Starbuck's Troy Plow, Ruggles' Nourse & Mason's Eagle Plow, and Wisconsin Plow, Grant's fanning mills, Riche's straw-cutters, Emery's corn-planter and sub-drill, washing machines, corn shellers, cultivators, thermometer churns, &c. &c.**

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Agents for the sale of Wheeler's Patent Improved Portable Rail Road Horse Power and Over-shot Threshers and Separators.

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Detroit, Jan'y 1, 1850.



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Straw Cutters, from \$5 to \$17 Corn Shellers, from \$2 to \$20.

Emery's Corn Planter and Seed Drill, \$15. Vegetable cutters,

\$13; Folding Harrows, 8 to \$20; corn and wheat cultivators, 5

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surfaces, 10 to \$30; cheese presses; hydraulic rams, 10 to \$30;

wheel-harrows, 4 to \$6; well and cistern pumps, 3 to \$10;

wheat drills; bush-hooks and scythes, 1 \$5; Boy hoes, \$5; pruning

knives, \$3; pruning saws and chisels, \$2; post spoons, \$1;

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Also, hay, straw, and dung forks, iron hooks, hoes, shovels,

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Jan

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